The PHOTOFACT® Servicer

SET 540 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ JULY 1961

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This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

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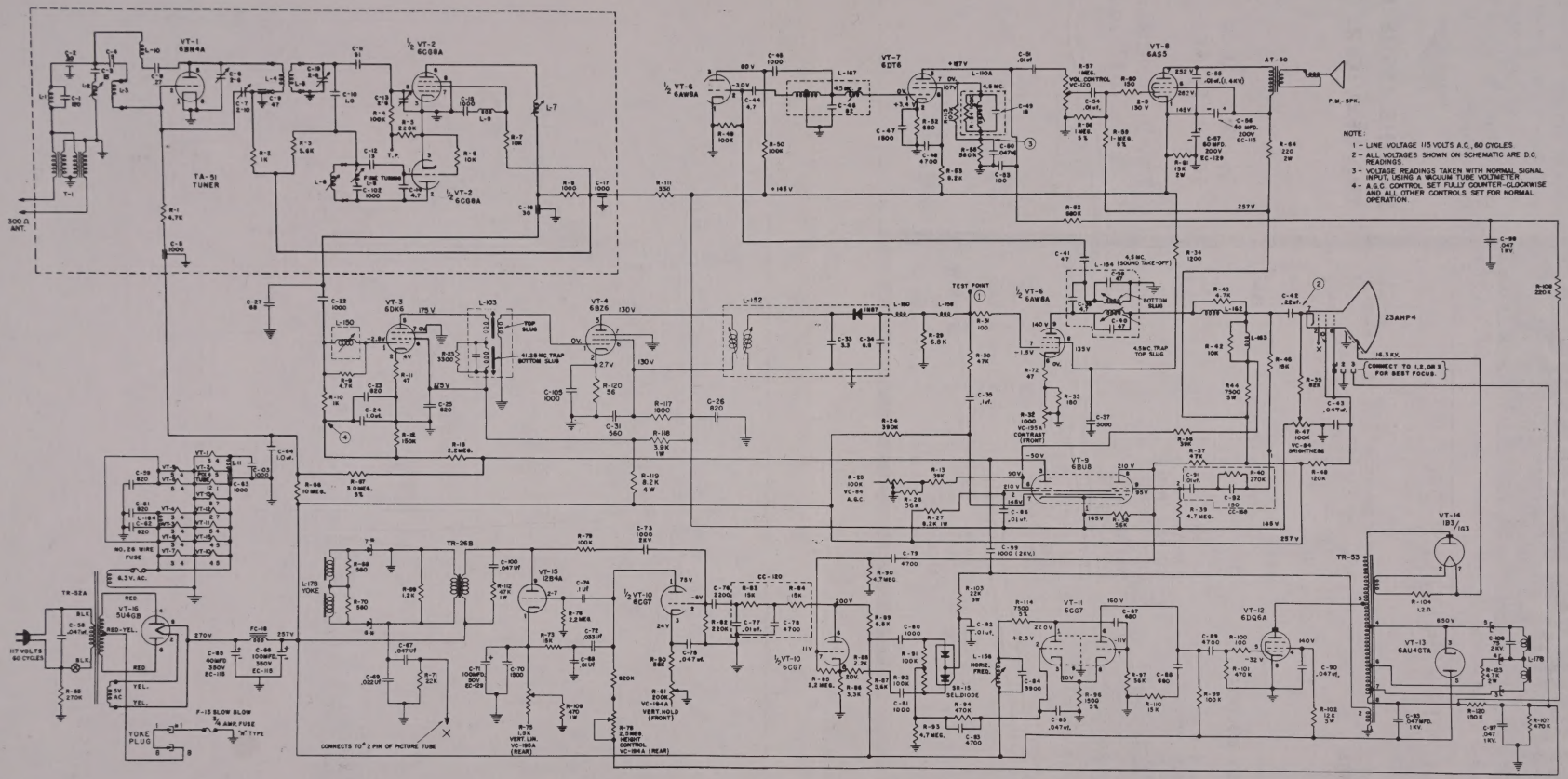
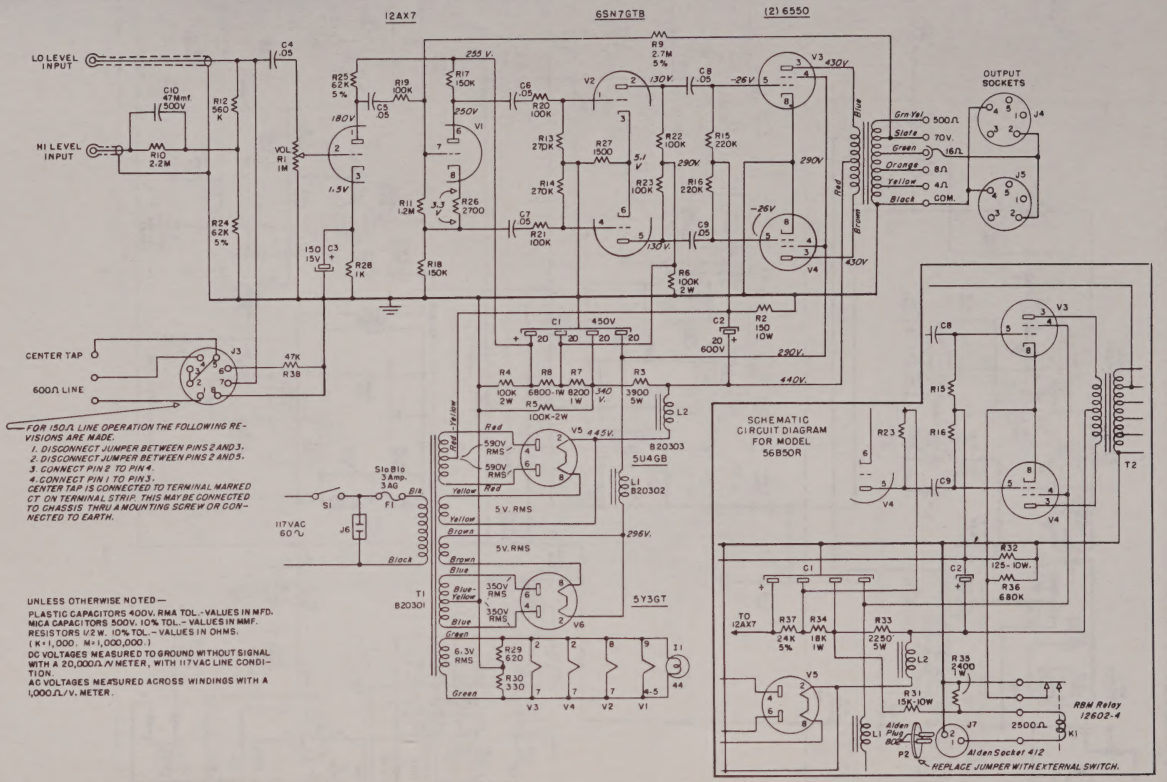
56B50, 56B50R

Trav-Ler Model 23K6065
(CH. 1051-100)



TRAV-LER MODEL 23K6065 (CH. 1051-100)

Schematic Diagram Courtesy of Trav-Ler Radio Corporation


12AX7
6SN7GTB
(2) 6550
LO LEVEL INPUT
HI LEVEL INPUT
OUTPUT SOCKETS
CENTER TAP
600Ω LINE
FOR 150Ω LINE OPERATION THE FOLLOWING REVISIONS ARE MADE.
1. DISCONNECT JUMPER BETWEEN PINS 2 AND 3.
2. DISCONNECT JUMPER BETWEEN PINS 2 AND 5.
3. CONNECT PIN 2 TO PIN 4.
4. CONNECT PIN 1 TO PIN 3.
CENTER TAP IS CONNECTED TO TERMINAL MARKED CT ON TERMINAL STRIP. THIS MAY BE CONNECTED TO CHASSIS THRU A MOUNTING SCREW OR CONNECTED TO EARTH.
UNLESS OTHERWISE NOTED—
PLASTIC CAPACITORS 400V. RMA TOL. - VALUES IN MFD.
MICA CAPACITORS 500V. 10% TOL. - VALUES IN MMF.
RESISTORS 1/2 W. 10% TOL. - VALUES IN OHMS.
(K=1,000. M=1,000,000.)
DC VOLTAGES MEASURED TO GROUND WITHOUT SIGNAL WITH A 20,000Ω/V METER, WITH 117 VAC LINE CONDITION.
AC VOLTAGES MEASURED ACROSS WINDINGS WITH A 1,000Ω/V. METER.
SCHEMATIC CIRCUIT DIAGRAM FOR MODEL 56B50R
RBM Relay 12602-4
REPLACE JUMPER WITH EXTERNAL SWITCH.

BELL SOUND MODELS 56B50, 56B50R

Schematic Diagram Courtesy of Bell Sound

PHOTOFACT® Folder

INDEX

A cumulative index is included as a part of this Folder. Upon finding that a new tube is not listed on the roll chart of a tester covered in this service, refer to the latest Tube Tester Data Index to determine in which PHOTOFACT Set the data was published. If listed, reference to that Folder will provide the necessary data.

TUBE TYPES	JACKSON 598, 648, and 658 See PHOTOFACT Set No.	TUBE TYPES	JACKSON 598, 648, and 658 See PHOTOFACT Set No.	TUBE TYPES	JACKSON 598, 648, and 658 See PHOTOFACT Set No.
2EV5	512	6ES8	524†	10HF8	536
2FQ5	524	6FA7	524	12BZ6	524†
2FY5	512	6FG7	516	12DY8	516
3ES5	524	6FQ5	524	12GW6	528
3EV5	512	6FQ7	532	13EM7	512
4AV6	532	6FS5	520	17DM4	532
4ES8	524	6FW5	520	17GW6	528
4GS8	516	6GW6	528	19EZ8	524
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6AJ8	524†	6GY6	536	34GD5	508
6AL3	524	6HF8	532	50FK5	536
6CB5	524†	6HG8	528	VR75	524†
6CB6	524†	6HJ8	516	7233	540
6CD6	524†	6HS8	524	7695	512
6CD7	512	8ET7	516	7701	520
6CQ4	528	8FQ7	536	7716	520
6EQ7	516	10EM7	532	† See Correction Notice	

JACKSON MODEL 598

Set 540

SUPPLEMENTS LATEST ROLL CHART 598-3

Tube Type	A.	B.	C.	Fil. Cont.	D.	E.	F.	G.
25DK4	25.	3	6	4	5			17
7233	6.3	4Z	369	5	1	2		75

JACKSON MODEL 648

Set 540

SUPPLEMENTS LATEST ROLL CHART 648-24

Tube Type	Fil.	D.	E.	Plate Test
25DK4	25.	234	5	14 W
7233	6.3	127	AC56	36 Y

JACKSON MODEL 658

Set 540

SUPPLEMENTS LATEST ROLL CHART 658-4

Tube Type	Sec.	Heater	Circuit H-K	P-G	Plate	Grid Test	Heater Current
25DK4	D	22.P	124	5	9U	VW	
7233	T	6.4L	127	ac56	43T	40VY•	

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TUBE TESTER DATA • SET 540

PHOTOFACT® Folder with CIRCUITRACE®

ADMIRAL
CHASSIS 25D6, 25UD6

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

ADMIRAL
CHASSIS 25D6, 25UD6

MODEL L71N177

ADMIRAL
CHASSIS 25D6, 25UD6

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PHOTOFACT® Folder with CIRCUITRACE®

ADMIRAL
CHASSIS 25D6, 25UD6

ADMIRAL
CHASSIS 25D6, 25UD6

MODEL L71N177

TRADE NAME	ADMIRAL MODELS	CHASSIS	VHF Tuner	UHF Tuner
	C71N131, C71N132, C71N133, C71N142, C71N147, C71N151, L71N161, L71N162, L71N163, L71N172, L71N177, T71N120, T71N122, T71N123	25D6 (Run 10)	94A197-514	
	C71UN131, C71UN132, C71UN133, C71UN142, C71UN147, C71UN151, L71UN161, L71UN162, L71UN163, L71UN172, L71UN177, T71UN120, T71UN122, T71UN123	25UD6 (Run 10)	94A198-514	94D183-1
MANUFACTURER	Admiral Sales Corp., Service Division, 903 Morrissey Drive, PO Box 845, Bloomington, Illinois			
TYPE SET	Color Television Receiver			
TUBES	VHF - Twenty Six, UHF - Twenty Seven			
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING 290 Watts, 3 Amp. @ 117 Volts AC		
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)			

SERVICING IN THE FIELD

FUSE AND FUSE DEVICE - LOCATION

3/4 Amp. (Vert.-Horiz. Sweep) - See Tube Placement Chart
3.5 Amp. (LV Supply) - See Tube Placement Chart
Fuse Wire (Filament) - See M6 in Photo, Page 9

AGC

The AGC may be varied by means of an AGC Control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by means of a Focus Coil Slug. (For location, see Tube Placement Chart".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Waveform Slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

ADDITIONAL MISCELLANEOUS ADJUSTMENTS PAGE 28.

SEE BACK PAGE FOR BLOCK DIAGRAM.

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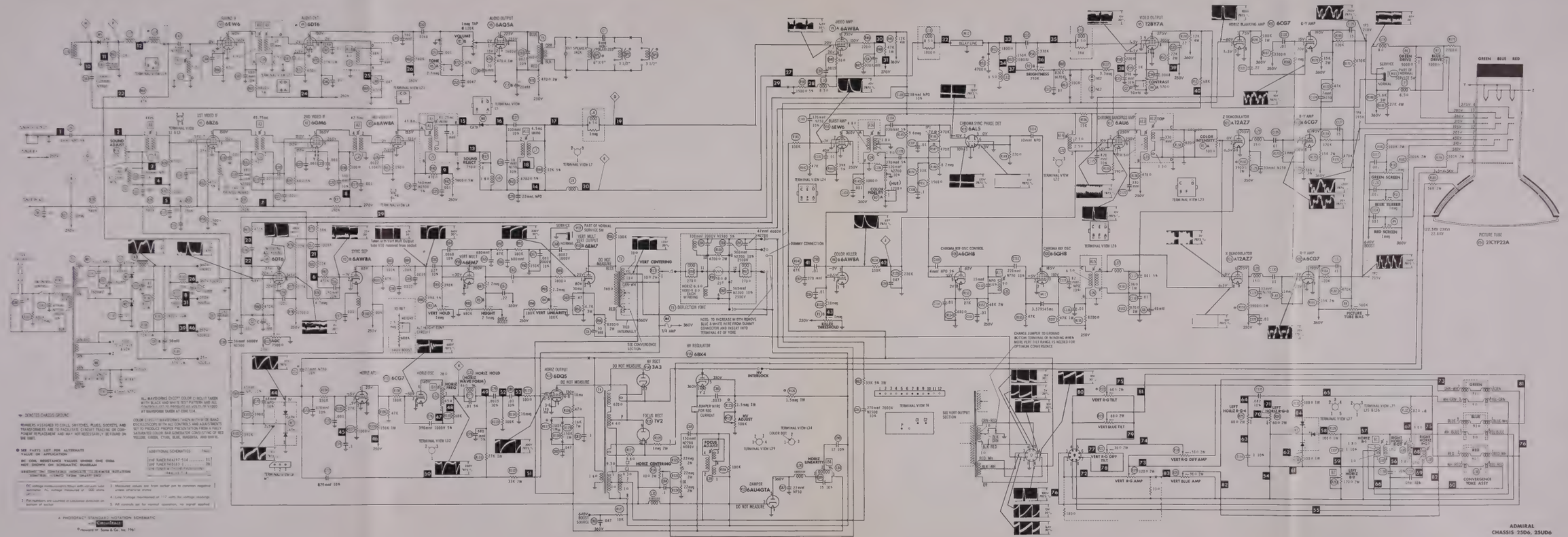
SET 540 FOLDER 1


ADMIRAL
CHASSIS 25D6, 25UD6
PICTURE TUBE
21CYP22A
GREEN BLUE RED
VIDEO AMP
6AWBA
BURST AMP
6EW6
CHROMA SYNC PHASE DET
6AL5
CHROMA BANDPASS AMP
6AU6
CHROMA MAT OSC CONTROL
6AGH8
CHROMA MAT OSC
6QH8
COLOR KILLER
6AWBA
Z DEMODULATOR
12AZ7
X DEMODULATOR
12AZ7
HORIZ BLANKING AMP
6CG7
G-Y AMP
6CG7
B-Y AMP
6CG7
R-Y AMP
6CG7
VIDEO OUTPUT
12BY7A
SYNC SEP
6AWBA
VERT OSC
6CG7
HORIZ OSC
6CG7
HORIZ OUTPUT
6DQ5
HV RECT
3A3
HV REGULATOR
6BK4
DAMPER
6AU4GTA
1ST VIDEO IF
6BZ6
2ND VIDEO IF
6GM6
1ST AUDIO
6EW6
AUDIO OUTPUT
6AQ5A
SOUND IF
6EW6
AUDIO DET
6DT6
SOUND ADJUST
VOLUME
TONE
SOUND REJECT
AGC
6AGM7
VERT HOLD
HEIGHT
VERT LINEARITY
VERT CENTERING
HORIZ HOLD
HORIZ FREQ
HORIZ CENTERING
FOCUS ADJUST
HV ADJUST
HV INTERLOCK
VERT R-G TILT
VERT BLUE TILT
VERT R-G DIFF TILT
VERT B-G DIFF TILT
VERT R-G AMP
VERT B-G AMP
VERT BLUE AMP
LEFT HORIZ R-G
LEFT HORIZ B-G
RIGHT HORIZ R-G
RIGHT HORIZ B-G
CONVERGENCE YOKE ASSY
GREEN SCREEN
BLUE SCREEN
RED SCREEN
PICTURE TUBE BIAS
BRIGHTNESS
CONTRAST
COLOR INTENSITY
COLOR CONTROL
COLOR PHASE
SERVICE NORMAL
PART OF NORMAL SERVICE SW
DO NOT MEASURE
DELAY LINE
TERMINAL VIEW L1
TERMINAL VIEW L2
TERMINAL VIEW L3
TERMINAL VIEW L4
TERMINAL VIEW L7
TERMINAL VIEW L23
TERMINAL VIEW L24
TERMINAL VIEW L25
TERMINAL VIEW L27
TERMINAL VIEW L32
TERMINAL VIEW L34
TERMINAL VIEW L35
TERMINAL VIEW M
SEE VERT OUTPUT SECTION
SEE CONVERGENCE SECTION
DUMMY CONNECTION
CHANGE JUMPER TO GROUND BOTTOM TERMINAL OF W-WIRING WHEN MORE VERT TILT RANGE IS NEEDED FOR OPTIMUM CONVERGENCE
NOTE: TO INCREASE WIDTH REMOVE BLUE B-WHITE WIRE FROM DUMMY CONNECTOR AND INSERT INTO TERMINAL #2 OF YOKE
DEFLECTION YOKE
HORIZ 6.8 Ω VERT 8.8 Ω W-WINDING
ALL WAVEFORMS EXCEPT COLOR C-BOLLT TAKEN WITH BLACK AND WHITE TEST PATTERN AND ALL CONTROLS SET TO PRODUCE BEST PICTURE
AT WAVEFORM GUIDE AT CODE 114.
COLOR CIRCUIT WAVEFORMS TAKEN WITH RF SIGNAL FROM BAR GENERATOR WITH ALL CONTROLS AND ADJUSTMENTS SET TO PRODUCE PROPER PRESENTATION FROM A FULLY SATURATED COLOR BAR GENERATOR CONSISTING OF RED, YELLOW, GREEN, CYAN, BLUE, MAGENTA, AND WHITE.
DENOTES CHASSIS GROUND
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE SET.
SEE PARTS LIST FOR ALTERNATE VALUES ON APPLICATION
RC COIL RESISTANCE VALUES WHERE OHMS OMITTED
NOTE: SHOWN ON SCHEMATIC DIAGRAM
WARNING: THE TERMINAL MARKED ⏚ IS THE CHASSIS BUT LESS THAN 1/10 OHM OR 0.1 OHM
ADDITIONAL SCHEMATICS
VHF TUNER 846197-514
UHF TUNER 940243-1
VHF TUNER WITH CRT PROTECTION
DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured on 1000 ohms per volt.
Line Voltage maintained at 117 volts for voltage readings.
All controls set for normal operation, no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
from CROWFACT
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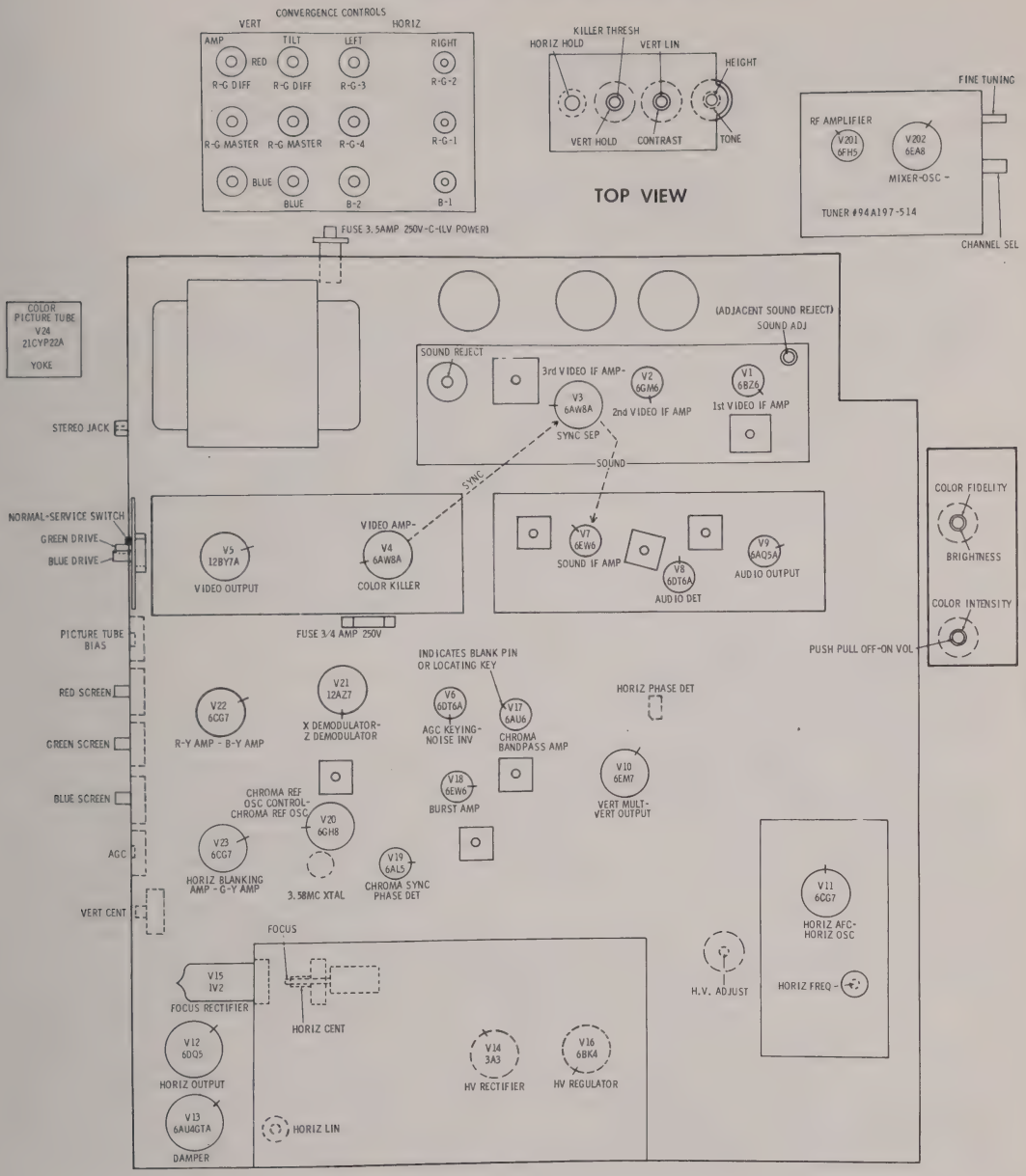
TUBE PLACEMENT CHART



ADMIRAL
CHASSIS 25D6, 25UD6

FOLDER 1

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A1 thru A19 ..... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545
A20 ..... GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537

VIDEO IF ALIGNMENT

Connect the negative lead of a 4 volt bias supply to point (A). Positive to chassis.
Connect the negative lead of a 15 volt bias supply to point (B). Positive to chassis.
Connect the negative lead of a 15 volt bias supply to pin 2 of V23. Positive to chassis.
Connect a clip lead from point (E) to chassis. Preset Sound Reject R17 at 75% clockwise rotation. Preset Adjacent Sound Adjust (R16) at 50% rotation. Video IF Shield must be in place during alignment.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	High side to ungrounded tube shield floating over Mixer-Osc. Tube. Low side to chassis.	43.8MC (Unmod.)	4	DC probe thru 10K to point (D). Common to chassis. Use negative scale.	A1	Adjust for maximum deflection. Use peak with core nearest printed board end of coil. Maintain VTVM reading of 1.5 volts by adjusting signal generator output.
2.	"	42.5MC	"	"	A2	"
3.	"	45.75MC	"	"	A3	"
4.	"	44.0MC	"	"	A4	"
5.	"	"	"	"	Mixer Plate Coil	Adjust for maximum deflection with peak at top end of coil.
6.	"	41.25MC	"	"	A5, R17	Adjust A5 and Sound Reject (R17) simultaneously for MINIMUM deflection with slug away from chassis. Reduce bias at point (A) if necessary for sufficient indication.
7.	"	47.25MC	"	"	A6, R16	Adjust A6 and Adjacent Sound (R16) simultaneously for MINIMUM deflection with slug away from chassis.

OVERALL VIDEO IF RESPONSE CHECK

Connect bias as under "Video IF Alignment".
Connect a .001mfd capacitor in series with a 180Ω resistor from pin 5 (plate) of 6GM6 (V2) to chassis with the resistor next to chassis.
Connect a 1000mmf capacitor across the scope leads.
The Video IF Shield must be in place during alignment.
Connect the DC probe of the VTVM to point (B). Common to chassis (Use negative scale.)
Use 10MC sweep unless otherwise noted.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	High side to ungrounded tube shield floating over Mixer-Osc. Tube. Low side to chassis.	45MC	42.17MC 45.75MC	4	Vert. Amp. thru demodulator probe (Fig. 1) to pin 5 (plate) of 6BZ6 (V1). Low side to chassis.		Set sweep output for .1 volt peak to peak on scope. Retouch Mixer Plate Coil and A4 for maximum gain and symmetry of response similar to Fig. 2. Reduce bias to -4 volts at point (A) if necessary.
9.	"	"	47.25MC	"	"		Retouch A6 and R16 to place marker in trap notch as in Fig. 2. Remove capacitor and resistor load from 6GM6 (V2). Increase bias at point (A) to -6 volts. Remove .001 mfd and 180Ω from pin 5 of V2.
10.	"	"	41.65MC 42.17MC 42.75MC 45.0MC 45.75MC	"	Vert. Amp. thru 10K to point (D). Low side to chassis.		Use 3 volts peak to peak on scope. Retouch A1, A2 and A3 for response similar to Fig. 3 with markers as shown. A1 controls tilt, A2 affects 42.17MC side of curve and A3 affects 45.75MC side. Connect a .001mfd capacitor from point (C) to chassis.
11.	"	"	41.25MC	"	"		Retouch A5 and R17 to place 41.25MC in trap notch if necessary. Remove .001mfd.
12.	Across VHF Antenna Terminals thru matching network (Fig. 4).	All VHF Channels separately	42.17MC 45.0MC 45.75MC	All VHF Channels separately	"		Decrease bias at point (B) to -3 volts. SLIGHTLY retouch A1, A2 and A3 to correct for any overall tilt that is approximately the same on all channels. Repeat step 11.

WAVEFORMS PAGE 29

ALIGNMENT INSTRUCTIONS (cont)

SOUND IF ALIGNMENT

Connect the negative lead of a 10 volt bias supply to point (A). Positive to chassis.
In the following steps, the signal level may be reduced by disconnecting the lead from the terminal at point (E) and connecting a 1meg potentiometer from point (E) to chassis. The lead is then connected to the center arm of the control. This control is then used to control the level of the signal applied to the Sound IF Strip. Start alignment with the control turned to maximum signal.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
13.	High side thru .001mfd to point (H). Low side to chassis.	4.5MC (Unmod.)	Any non-interfering channel	DC probe thru diode probe (Fig. 5) to pin 1 (grid) of 6DT6A (V8). Common to chassis. Connect scope across voice coil of speaker.	A7	Connect a jumper from pin 7 (grid 3) of V8 to chassis. Adjust for maximum deflection. Set generator output for 1 volt on VTVM. Use peak with slug nearest top of coil form.
14.	"	"	"	"	A8, A9	Adjust for maximum deflection. Set generator output for 1 volt on VTVM. Peak with maximum core separation. Repeat steps 13 and 14.
15.	Remove the diode probe and jumper. Turn off signal generator and tune in strongest signal in the area. Set volume control for normal volume. Set A10 so that core is flush with top of coil form. Observe scope and listen to sound. Change bias at point (A) to zero. Adjust A10 clockwise to a peak. Continue clockwise to second louder peak and adjust for maximum output at this second peak. Gradually decrease signal until sound becomes distorted. Maintain distorted signal and adjust A8 for maximum output.					

ALTERNATE SOUND IF ALIGNMENT USING FM GENERATOR

Connect the negative lead of a 10 volt bias supply to point (A). Positive to chassis.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
13.	High side thru .001mfd to point (H). Low side to chassis.	4.5MC (400∿ FM Mod. 15KC Swp.)	Any non-interfering channel	DC probe thru diode probe (Fig. 5) to pin 1 (grid) of 6DT6A (V8). Common to chassis.	A7	Connect a jumper from pin 7 (grid) of V8 to chassis. Adjust for maximum deflection. Set generator for 1 volt on VTVM. Use peak with slug nearest top of coil form.
14.	"	"	"	"	A8, A9	Adjust for maximum deflection. Set generator for 1 volt on VTVM. Remove VTVM, diode probe and jumper.
15.	"	"	"	Use SCOPE Across speaker voice coil	A10	Starting with the slug fully counterclockwise adjust to a peak. Continue turning clockwise until a second peak is reached and adjust for maximum at this second peak. Decrease signal until detector breaks out of lock as indicated by jagged portions of the sine wave on the scope. Retouch A8 for symmetrical breakout similar to Fig. 6.

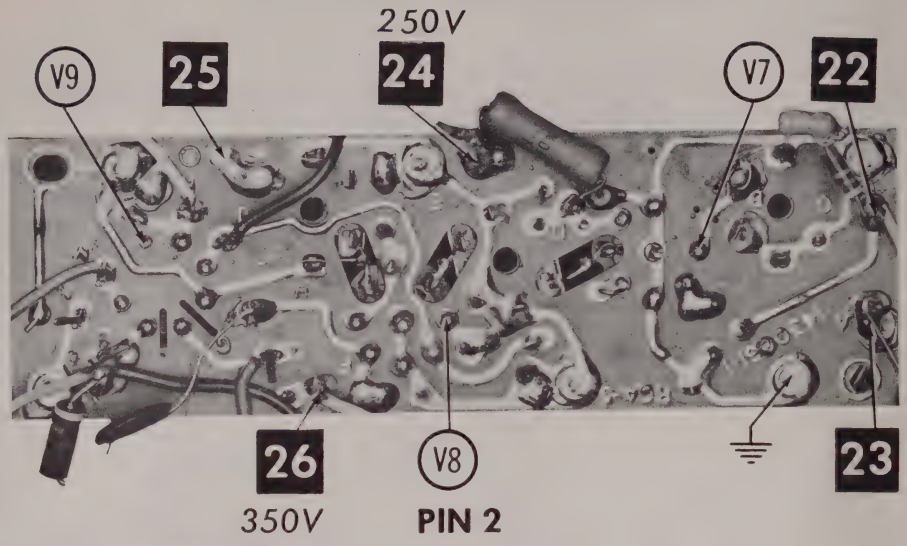
4.5MC TRAP ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
16.	High side thru .001mfd to point (H). Low side to chassis.	4.5MC (400∿ AM)	Any non-interfering channel	Use SCOPE Across speaker voice coil	A11	Adjust for MINIMUM 400∿ indication on scope.

CHROMA BANDPASS ALIGNMENT

Connect the negative lead of a 7 volt bias supply to point (J). Positive to chassis.
Connect a clip lead from point (E) to chassis.
Turn Color Intensity Control fully clockwise.

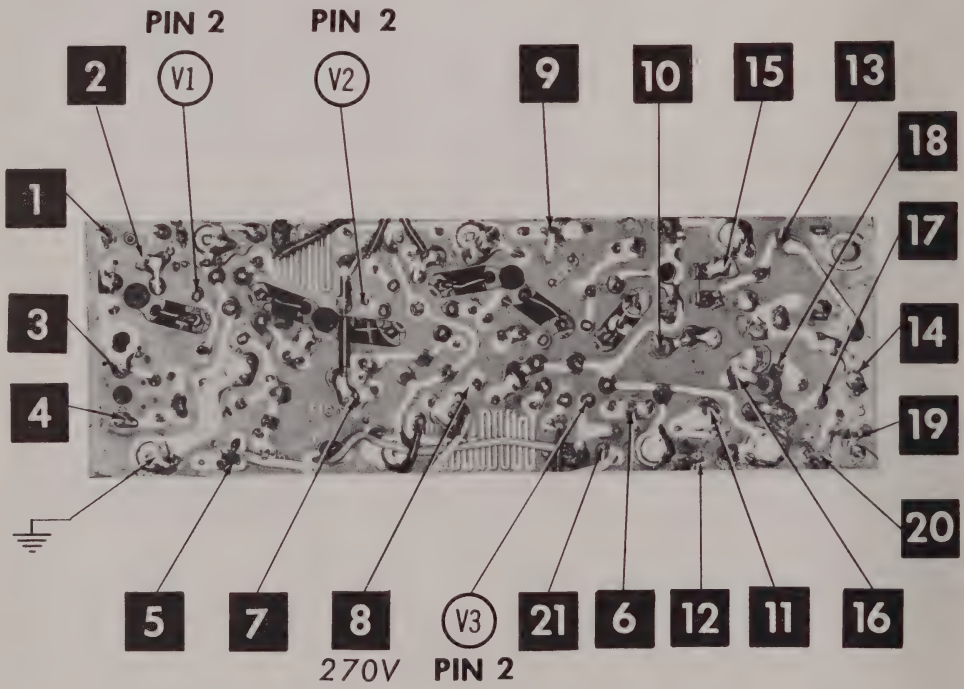
	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
17.	High side thru .1mfd to pin 1 (grid) of 6AU6 (V17). Low side to chassis.	3.58MC (3-5MC Swp.)	3.08MC 4.08MC	Any non-interfering channel	Vert. Amp. thru demodulator probe (Fig. 7) to pin 2 (grid) of 12AZ7 (V2l). Low side to chassis.	A12, A13	Adjust for response similar to Fig. 8 with equal marker height.
18.	Turn the Brightness and Contrast controls fully counterclockwise. Connect 330Ω resistor and 4mfd capacitor in series from plate (Pin 5) of 6AU6 (V17) to chassis.						
19.	High side to ungrounded tube shield floating over Mixer-Osc. tube. Low side to chassis. Connect high side of separate marker generator to ungrounded tube shield of Chroma Bandpass Amp. (V17). Low side to chassis.	45MC (10MC Swp.)	3.08MC 4.08MC	Any non-interfering channel	Vert. Amp. thru demodulator probe (Fig. 7) to pin 2 (grid) of 12AZ7 (V2l). Low side to chassis.	A14	Remove clip lead between point (E) and chassis. Adjust A14 for response similar to Fig. 9. Peak with core nearest chassis end of coil form.



A Howard W. Sams CIRCUITRACE® Photo

SOUND PRINTED BOARD

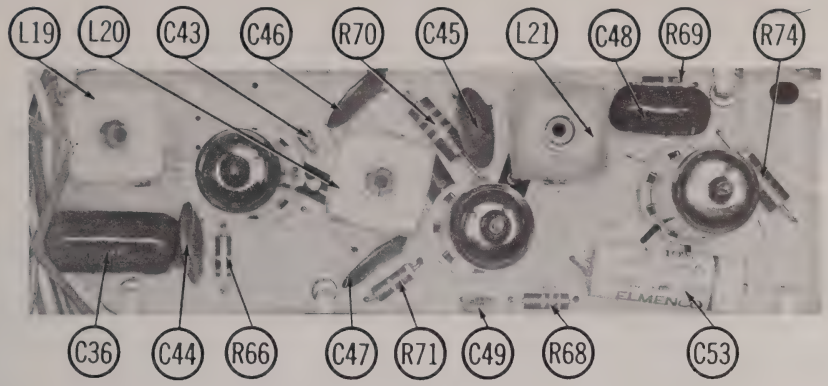
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



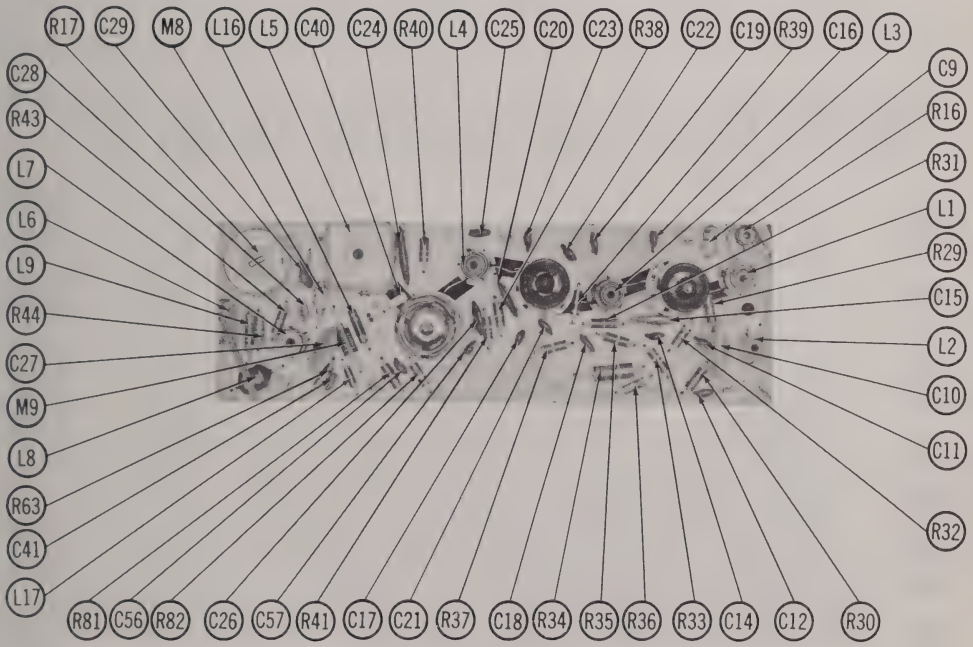
A Howard W. Sams CIRCUITRACE® Photo

VIDEO IF PRINTED BOARD

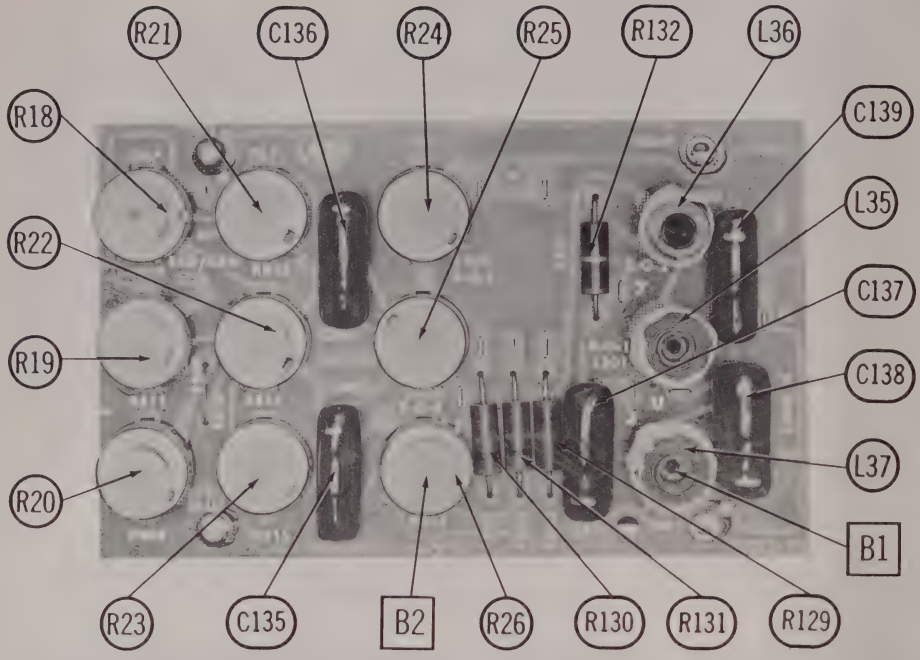
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

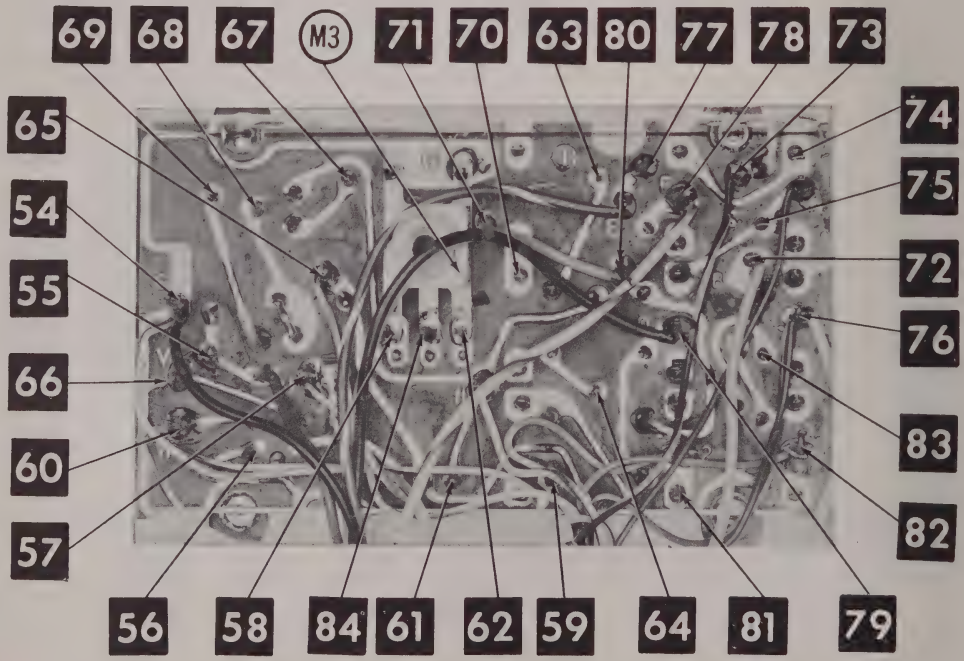


SOUND PRINTED BOARD



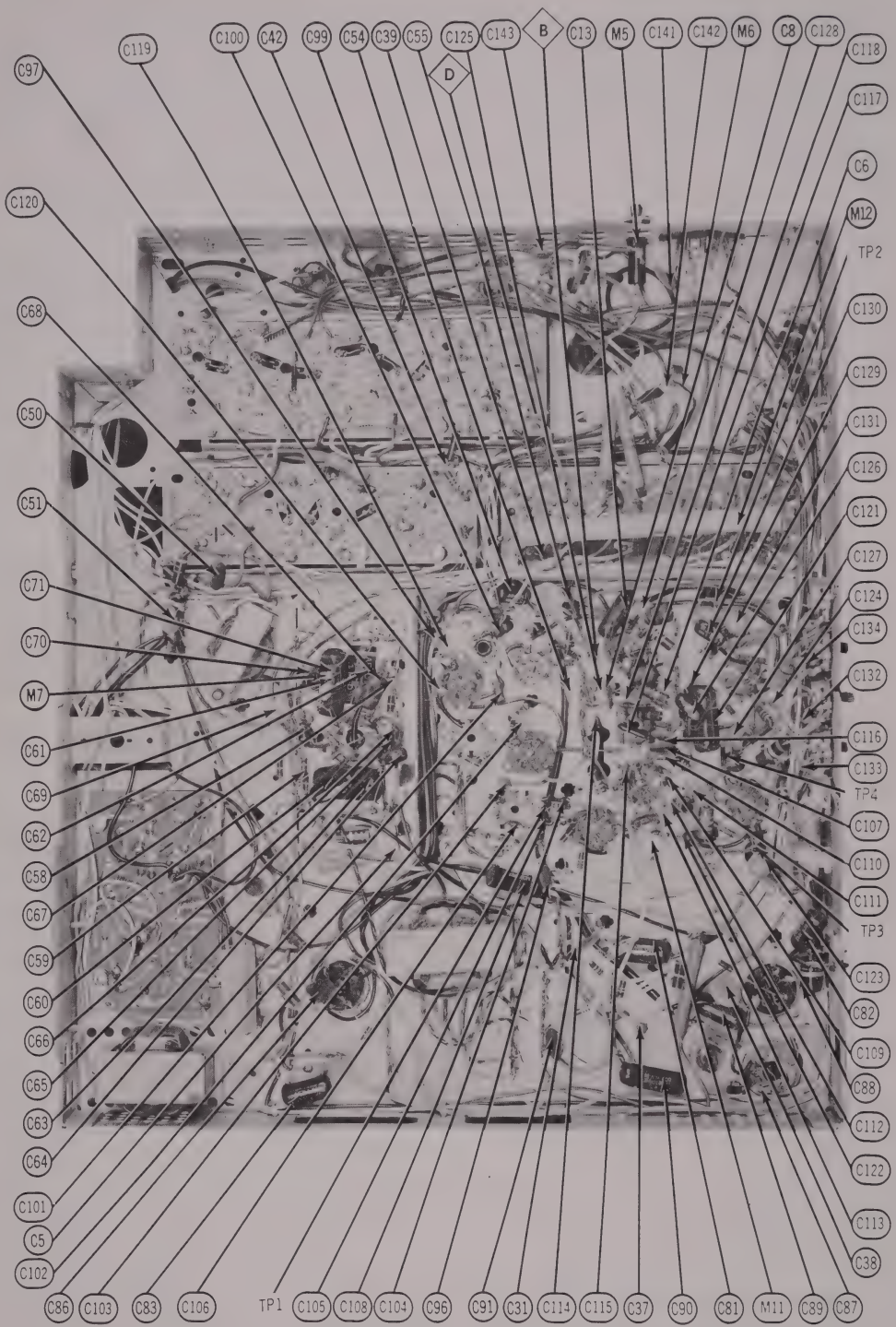
VIDEO IF PRINTED BOARD





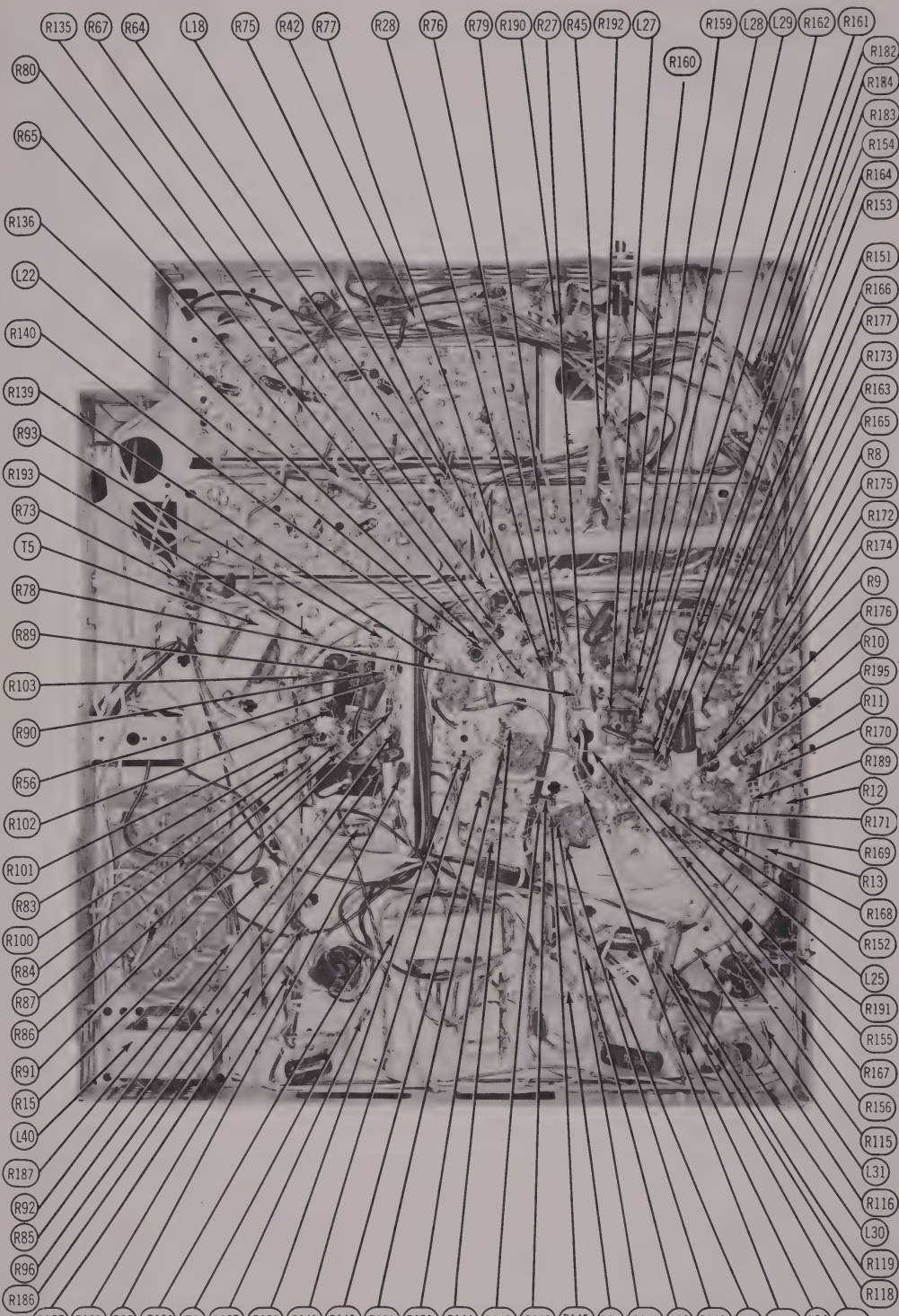
A Howard W. Sams CIRCUITRACE® Photo

CONVERGENCE PRINTED BOARD



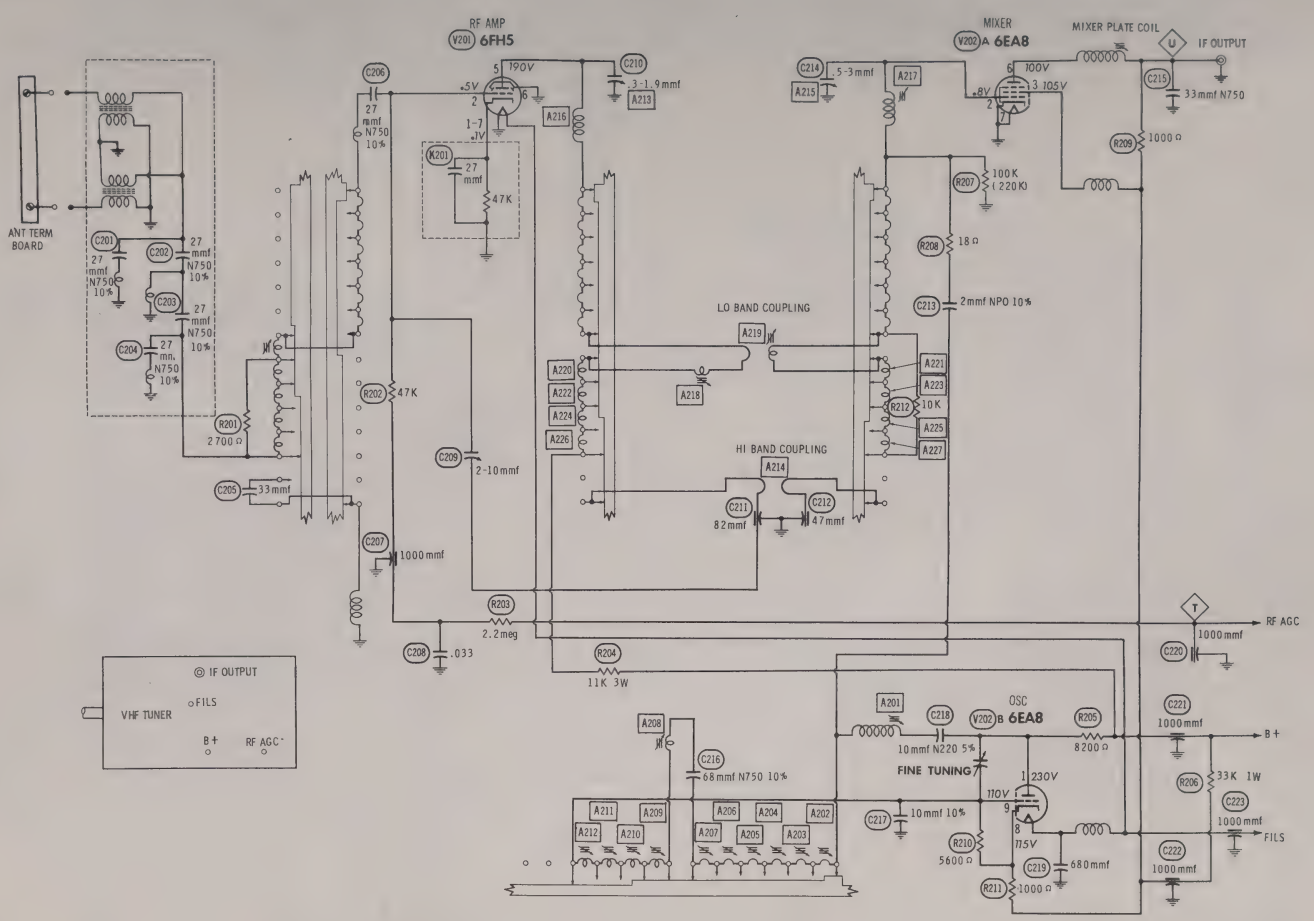
TP1 -.2V PHASE DET OUTPUT TP3 210V GREEN GRID
TP2 205V RED GRID TP4 195V BLUE GRID

CHASSIS BOTTOM VIEW - CAPACITOR, MISC., TEST POINT IDENT.



CHASSIS BOTTOM VIEW - RESISTOR, INDUCTOR, TRANSFORMER IDENT.

ADMIRAL
CHASSIS 25D6, 25UD6



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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VHF TUNER 94A197-514

ADMIRAL
CHASSIS 25D6, 25UD6

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

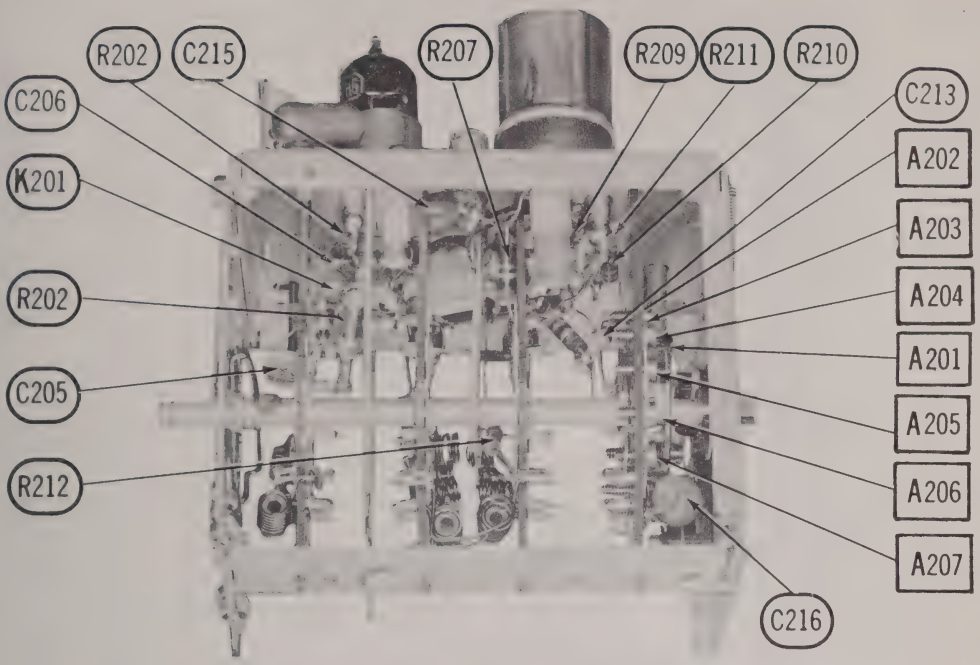
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201 thru A212, A213 thru A215 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A216 thru A219 ..... GENERAL CEMENT #5000, 5003, 5009, 8290
WALSCO #2520, 2523, 2525, 2537

TUNER ALIGNMENT

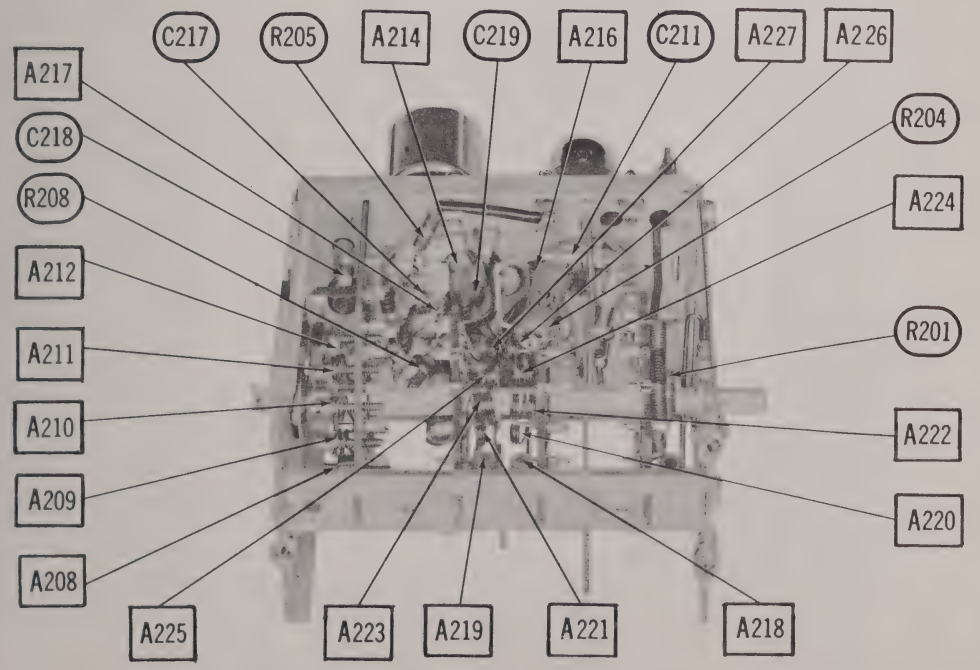
Connect the negative lead of a 3 volt bias supply to point Ⓣ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.
Unplug IF Output Cable from the Tuner and connect a 39Ω resistor in series with .001mfd capacitor across IF Output Socket in Tuner.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Across antenna terminals thru pad (Fig. 201).	Not Used	257MC	13	Vert. Amp. thru diode probe to point Ⓓ. Low side to chassis.	A201	Adjust for zero beat on scope.
2.	"	"	251MC	12	"	A202	"
3.	"	"	245MC	11	"	A203	"
4.	"	"	239MC	10	"	A204	"
5.	"	"	233MC	9	"	A205	"
6.	"	"	227MC	8	"	A206	"
7.	"	"	221MC	7	"	A207	"
8.	"	"	129MC	6	"	A208	"
9.	"	"	123MC	5	"	A209	"
10.	"	"	113MC	4	"	A210	"
11.	"	"	107MC	3	"	A211	"
12.	"	"	101MC	2	"	A212	"
13.	"	183MC	181.25MC 185.75MC	8	"	A213, A214, A215	Adjust for maximum gain and symmetry of response similar to Fig. 202 with markers as shown. Adjust A213 for marker position, A214 for proper bandwidth, and A215 for proper tilt.
14.	"	213MC	211.25MC 215.75MC	13	"	A216 A217	Adjust for maximum gain and symmetry of response similar to Fig. 202 with markers as shown. Adjust A216 for proper marker positions, A217 for proper tilt and retouch A214 for proper bandwidth.
15.	Repeat steps 13 and 14 for proper tracking and response on all channels from 13 to 7. Repeat step 1. Turn off generators and measure oscillator injection voltage at point Ⓓ with VTVM. The reading obtained should be between -2.5 to -5.5 volts. If outside these limits replace V202 and repeat steps 1 thru 14.						
16.	Repeat step 8.						
17.	Across antenna terminals thru pad (Fig. 201).	85MC	83.25MC 87.75MC	6	Vert. Amp. thru demodulator probe to point Ⓓ. Low side to chassis.	A218, A219	Adjust for maximum gain and symmetry of response similar to Fig. 202 with markers as shown. Adjust A219 for maximum gain, A220 for proper marker positions, and A221 for proper tilt.
18.	"	79MC	77.25MC 81.75MC	5	"	A220, A221	If necessary, adjust appropriate coil for response similar to Fig. 202.
19.	"	69MC	67.25MC 71.75MC	4	"	A222, A223	"
20.	"	63MC	61.25MC 65.75MC	3	"	A224, A225	"
21.	"	57MC	55.25MC 59.75MC	2	"	A226, A227	"

CONTINUED ON PAGE 21



VHF TUNER 94A197-514 - RIGHT SIDE



VHF TUNER 94A197-514 - LEFT SIDE

PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ITEM No.	USE	TYPE
V1	1st Video IF Amp.	6BZ6
V2	2nd Video IF Amp.	6GM6
V3	3rd Video IF Amp. - Sync Sep.	6AW8A
V4	Video Amp. - Color Killer	6AW8A
V5	Video Output	12BY7A
V6	AGC Keying - Noise Inv.	6DT6A (6DT6) *
V7	Sound IF Amp.	6EW6
V8	Audio Det.	6DT6A (6DT6) *
V9	Audio Output	6AQ5A
V10	Vert. Mult. - Vert. Output	6EM7
V11	Horiz. AFC - Horiz. Osc.	6CG7
V12	Horiz. Output	6DQ6
V13	Damper	6AU4GTA
V14	HV Rectifier	3A3
V15	Focus Rectifier	1V2
V16	HV Regulator	6BK4
V17	Chroma Bandpass Amp.	6AU6
V18	Burst Amp.	6EW6
V19	Chroma Sync Phase Det.	6AL5
V20	Chroma Ref. Osc. Control + Chroma Ref. Osc.	6GH8
V21	X Demodulator - Z Demodulator	12AZ7
V22	R-Y Amp. - B-Y Amp.	6CG7
V23	Horiz. Blanking Amp. - G-Y Amp.	6CG7

* Alternate

PICTURE TUBE

ITEM No.	REPLACEMENT DATA					NOTES
	ADMIRAL PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
V24	21CYP22A		21CYP22A ①			① Aluminized

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	160	250	67B43-3	AFH1-31-75	XA0315	WP131.5	TMS-1480	TVL-1540	
C2A	▲160	250	67C56-3	AFH84-117-49		FP341.6	TMT-3259	TVLS-4701.3 *	
B	■20	450				TC75	TD-50-50		
C	▲50	75							
D	50	50							
C3A	▲80	450	67C56-2	AFH4-86-25		FP385.5	TMQ-4589	TVLS-4739.9 *	
B	■50	450				TT25X20			
C	▲10	450							
D	20	25							
C4	2	350	67B45-59	PRS1705	BR245	TC595	TD-2-450	TVA-1701	
C5	50	150	67A58-61	PRS1480	BR5015	TC49	TD-50-150	TVA-1414	
C6	40	25	67B46-6	PRS1470	BR4015	TC48	TD-40-150	TVA-1413	
C7	8	10NP	67B59-3	PRS6200	BBR8-150	TCN108		TVANS-1112 *	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C8	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C9	9 NPO 5%		NPO-S1 10	TCZ-10	C10V9C	CCTO-100	CNO-410	10TCC-Q10
C10	150 NPO 5%			DTZ-150			CNO-315	10TCC-T15
C11	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C12	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C13	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C14	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C15	680 N2200 10%	#65B60-7				*		
C16	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C17	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C18	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C19	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C20	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C21	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C22	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C23	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C24	560 N1500 5%	#65B63-20				*		
C25	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C26	.0022	(.0047) †	BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C27	100 10%		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C28	10 N150 10%					*		10TCP-Q10
C29	22 NPO		NPO-DI 22	DTZ-22	C10Q22C	CCTO-220	CNO-422	10TCC-Q22
C30	.0015		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C31	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C32	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C33	.22 200V		P288N-22		CUB2P22	2DP-4-224	GEM-2022	2TM-P22
C34	.0068		BPD-0068	DD-682	BYA10D68	CCD-682	B-268	5HK-D68
C35	390 10%		DI-390	DD-391	L10T39	CCD-391	GP339	10TS-T39
C36	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C37	150		DI-150	DD-151	L10T15	CCD-151	B-315	10TS-T15
C38	56 6000V N1500	#65B59-13						
C39	.001	Note 1	BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C40	1.5 N3300 ±.25mmf	#65B57-4				*		
C41	10 N150	#65B64-111				*		10TCP-Q10
C42	5 N1500 5%	#65B58-3				*		
C43	680 10%		DI-680	DD-681	5R5T68	CCD-681	GP368	10TS-T68
C44	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C45	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C46	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C47	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C48	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C49	560		DI-560	DD-561	BYA10T56	CCD-561	B-356	10TS-T56
C50	.0068		BPD-0068	DD-682	BYA10D68	CCD-682	B-268	5HK-D68
C51	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C52	.0047		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47

PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C53	.0027 1600V 10%				DPMS16D3	16DP-2-302	GEM-1623	MB-D3
C54	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C55	.0033		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C56	150 10%		DI-150	DD-151	L10T15	CCD-151	GP315	10TS-T15
C57	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C58	.0022		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C59	.0015		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C60	.027 600V 10%		P684CM-027		DPMS6S27	6DP-3-273	GEM-613	6PS-S27
C61	.22 400V		P488N-22		CUB4P22	4DP-5-224	GEM-4122	4TM-P22
C62	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C63	.47 200V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C64	.0068 400V 10%		V84C6D68-10%		PM6D68	6DP-1-682	GEM-16268	6TM-D68
C65	680		DI-680	DD-681	BYA10T68	CCD-681	B-368	10TS-T68
C66	680		DI-680	DD-681	BYA10T68	CCD-681	B-368	10TS-T68
C67	.001 2000V 10%	#64B28-3						
C68	.0082 1000V		PI088N-0082	DD-822	CUB16D8	16DP-3-802	GEM-16282	MB-D8
C69	47 NPO 10%		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C70	68 NPO 10%		NPO-DI 68	DTZ-47	C10Q68C	CCTO-680	CNO-468	10TCC-Q68
C71	27 N750 10%	Note 1	N750-DI 25	TCZ-27	C10Q27U	CCTN-220	CN7-427	10TCU-Q27
C72	820 10%		DI-820	DD-821	5R5T82	CCD-821	GP382	10TS-T82
C73	820 10%		DI-820	DD-821	5R5T82	CCD-821	GP382	10TS-T82
C74	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	GEM-201
C75	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C76	390 1000V 5%	#65B77-21				VCM-35-391J		
C77	.01 600V 5%	#64A30-292						
C78	680 5%		1464-00068		5R5T68	CM-19B-681J	MCJ249	MS-368
C79	.0015 600V 10%		V84C6D15-10%	DD-152	PM6D15	6DP-1-152	GEM-16215	6TM-D15
C80	.01 600V 10%		V84C6S1-10%		PM6S1	6DP-2-103	GEM-1611	6TM-S10
C81	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C82	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C83	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C84	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C85	130 6000V N2200	#65B59-27						
C86	.0033		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C87	22 N750		N750-DI 22	DTN-22	C10Q22U	CCTN-220	CN7-422	10TCU-Q22
C88	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C89	.15 200V 10%		V84C2P15-10%		PM2P15	2DP-3-153	GEM-2015	2TM-P15
C90	.12 600V 10%		V84C6P15-10%		PM6P15	6DP-5-154		
C91	270 2000V N1500 10%	#65B59-3						
C92	560 2500V N2200 10%	#65B59-17						
C93	560 2500V N2200 10%	#65B59-17						
C94	100 3000V N1500 5%	#65B59-14						
C95	47 4000V N2200	#65B59-18						
C96	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C97	270		DI-270	DD-271	L10T27	CCD-271	B-327	10TS-T27
C98	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C99	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C100	18 NPO 10%		NPO-SI 18	TCZ-18	C10Q18C	CCTO-180	CNO-418	10TCC-Q18
C101	120 N750 10%		N750-SI 120	TCN-120	C10T12U	CCTN-121	CN7-312	10TCU-T12
C102	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C103	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C104	330 5%		1469-00033		5R5T33	CM-19B-331J		MS-333
C105	330 5%		1469-00033		5R5T33	CM-19B-331J		MS-333
C106	120 N2200 10%	#65B60-16				*		
C107	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C108	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C109	4 NPO 5%				C10V4C			10TCC-V39
C110	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C111	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C112	15 NPO 10%		NPO-DI 15	DTZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C113	220 N750 10%		N750-DI 220	DTN-220	C10T22U	CCTN-221	CN7-322	10TCU-T22
C114	10 NPO		NPO-DI 10	DTZ-10	C10Q10C	CCTO-100	CNO-410	10TCC-Q10
C115	82 NPO 10%			DTZ-82	C10Q82C	CCTO-820	CNO-482	10TCC-Q82
C116	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C117	.001 5%		1469-001		5R5DI	CM-19B-102J	MCJ255	MS-21
C118	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C119	820 10%		DI-820	DD-820	5R5T82	CCD-821	GP382	10TS-T82
C120	330		DI-330	DD-331	L10T33	CCD-331	B-333	10TS-T33
C121	.22 400V		P488N-22		CUB4P22	4DP-5-224	GEM-4022	4TM-P22
C122	.01 600V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S10
C123	.15 400V		P488N-15		CUB4P15	4DP-4-154	GEM-4015	4TM-P15
C124	7 N150	#65B64-8				*		10TCP-V68
C125	33 N150	#65B64-23				*		10TCP-Q33
C126	.01 600V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S10
C127	.15 400V		P488N-15		CUB4P15	4DP-4-154	GEM-4015	4TM-P15
C128	33 N150	#65B64-23				*		10TCP-Q15
C129	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C130	.01 600V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S10
C131	.15 400V		P488N-15		CUB4P15	4DP-4-154	GEM-4015	4TM-P15
C132	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C133	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C134	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C135	.082 200V 10%				DPMS6S82	6DP-4-823		6PS-S82
C136	.1 200V 10%		V84C2P1-10%		PM2P1	2DP-3-104	GEM-201	2TM-P10
C137	.1 200V 10%		V84C2P1-10%		PM2P1	2DP-3-104	GEM-201	2TM-P10
C138	.1 400V 10%		V84C4P1-10%		PM4P1	4DP-3-104		4TM-P10
C139	.056 400V 10%		P684CM-057		DPMS6S56	4DP-3-563		6PS-S56
C140	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C141	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C142	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C143	47 2000V N2200 10%	#65B59-29						

Note 1. May not be used in some versions.

Admiral Part Number

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ADMIRAL Part No.	CENTRALAB Part No.	CLAROSTAT Part No.	CTS—IRC Part No.	MALLORY Part No.	INSTALLATION NOTES
R1A	500Ω	½	75B65-32	F1-1				Color Intensity
B	1meg	½		R2L-57		†(CU-1348	■ UE4133-S	Volume
C	120K Tap							
	Switch			Not Req.				Push-Pull, Off-On
R3A	1300Ω	½	75B65-33	F1-7				Color Fidelity
B	350K	½		R3-34		♦(CU-1368	▲ UE4134	Brightness
R3A	1meg	½	75B62-5					Vert. Hold
B	1meg	½						Killer Threshold
R4A	5750Ω	½	75B63-4					Contrast
B	100K	½						Vert. Linearity
R5A	2.5meg	½	75B63-6					Tone
B	2.5meg	½						Height
R6A	5000Ω	½	75C80-5	TT-10	B47-5000-S	B11-1114	PTA53L	Green Drive
B	Shaft			Not Req.	Not Req.	T364	Not Req.	
R7A	5000Ω	½	75C80-5	TT-10	B47-5000-S	B11-1114	PTA53L	Blue Drive
B	Shaft			Not Req.	Not Req.	T364	Not Req.	
R8A	500K	½	75C80-4	TT-99	B47-500K-S	B11-133	PTA55L	Pic. Tube Bias
B	Shaft			Not Req.	Not Req.	T364	Not Req.	
R9A	1meg	½	75B61-10	TT-99	B47-1meg-S	B11-137	SU-54	Red Screen
B	Shaft			Not Req.	Not Req.	T364	Not Req.	
R10A	1meg	½	75B61-10	TT-99	B47-1meg-S	B11-137	SU-54	Green Screen
B	Shaft			Not Req.	Not Req.	T364	Not Req.	
R11A	1meg	½	75B61-10	TT-99	B47-1meg-S	B11-137	SU-54	Blue Screen
B	Shaft			Not Req.	Not Req.	T364	Not Req.	
R12A	7500Ω	½	75B61-26	AB-13	A47-7500-S	B11-115	RU753L *	AGC
B	Shaft			AK-1	FTS3-1/4	T364	SL-3500 *	
R13	10Ω	2(WW)	75B64-9					Vert. Centering
R14	10Ω	2(WW)	75B64-10					Horiz. Centering
R15A	500K	½	75B61-15	TT-99	B47-500K-S	B11-133	SU-50	HV Adjust
B	Shaft			Not Req.	Not Req.	T364	Not Req.	
R16	10K	1/4	75B66-1					Sound Adjust
R17A	750Ω	½	75B60-8			B11-105	PTA75L	Sound Reject
B	Shaft					T364	Not Req.	
R18	150Ω	2(WW)	75B64-7					Vert. R-G Diff. Amp.
R19	120Ω	2(WW)	75B64-5					Vert. R-G Amp.
R20	30Ω	2(WW)	75B64-6					Vert. Blue Amp.
R21	30Ω	2(WW)	75B64-6					Vert. R-G Diff. Tilt
R22	60Ω	2(WW)	75B64-3 ①				PTL60A	Vert. R-G Tilt
R23	60Ω	2(WW)	75B64-3				PTL60A	Vert. Blue Tilt
R24	60Ω	2(WW)	75B64-2				PTL60A	Left Horiz. R-G③
R25	60Ω	2(WW)	75B64-2				PTL60A	Left Horiz. B-G④
R26	120Ω	2(WW)	75B64-5					Left Horiz. B-J

† "CONCENTRIKIT" Equivalent: K-16 Kit with Base Elements and Shafts: B11-103, P17-113 (Panel) B13-137X, R23-202 (Rear)

♦ "CONCENTRIKIT" Equivalent: K-6 Kit with Base Elements and Shafts: B17-208, P17-112 (Panel) (Not available as a factory assembled unit.) - B11-130, R1-200 (Rear)

■ "STA-LOC" Equivalent: FA52L, RUP16T1253, OF137S.

▲ "STA-LOC" Equivalent: FA15ZN, RU2541, OF137S, IS2062.

* Use SL-38 Bushing.

① Some versions may use 30Ω (Part #75B64-6).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC Part No.	WORKMAN TV Part No.	REMARKS
R27	10meg			
R28	560K			
R29	4700Ω 5%			
R30	1000Ω			
R31	150Ω			
R32	47Ω 5%			
R33	220K			
R34	1500Ω 2W			
R35	150K ↩			▲ Matched
R36	4.7meg ↩			Pair
R37	150K ↩			
R38	100Ω			
R39	56Ω 5%			
R40	470Ω			
R41	150Ω			
R42	5600Ω 5W	PW5-5600	5W-SQ-5600	
R43	8200Ω 5%			
R44	12K 5%			
R45	12K 4W	PW5-12K	4G-12K	
R46	220Ω			
R47	330K			
R48	47K 1W			
R49	56Ω			
R50	1500Ω 5%			
R51	1800Ω			
R52	150K			(100K)Ω *
R53	4700Ω			Note 1
R54	330K			
R55	68K			
R56	100K			
R57	22K 2W			
R58	220Ω			
R59	1000Ω			
R60	82K			(470K)Ω*
R61	100K			Note 1
R62	33K 5% 1W			
R63	10K			
R64	47K			
R65	6800Ω 3W	PW3-6800	3G-6800	
R66	47Ω			
R67	470K			
R68	560K			
R69	470K			
R70	47K 1W			
R71	470Ω			
R72	47K			
R73	470Ω 1W			
R74	470Ω 1W			
R75	39K			
R76	22K			

ITEM No.	RATING	REPLACEMENT DATA IRC Part No.	WORKMAN TV Part No.	REMARKS
R77	270Ω			
R78	1200Ω			
R79	560K			
R80	470K			
R81	22K			
R82	470K			
R83	100K			
R84	100K			
R85	390K			
R86	39K 5%			
R87	2.5meg			
R88	680K			
R89	1000Ω			
R90	150K			
R91	100K			
R92	47K			
R93	2.2meg			
R94	100K			
R95	4700Ω 3W	PW3-4700	3G-4700	
R96	8200Ω 2W			
R97	270Ω			
R98	270Ω			
R99	50Ω @ 25°C †			
R100	100K			
R101	47K			
R102	390K			
R103	390K			
R104	150K			
R105	27K			
R106	47K			
R107	10000			
R108	180K			
R109	150K 1W			
R110	68K			
R111	27K 1W			
R112	33K 2W			
R113	100K			
R114	10meg			
R115	100Ω			
R116	47Ω			
R117	100K 1W			Note 1
R118	150K 1W			Note 1
R119	15K 7W	PW10-16K	10W-SQ-16K	
R120	1meg 2W			
R121	3.6Ω			
R122	22meg 2W			
R123	32meg 2W			
R124	22meg 2W			
R125	1.5meg 1W			▲ Matched
R126	1.5meg 1W ↩			Pair

RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA IRC Part No.	WORKMAN TV Part No.	REMARKS
R127	10K			
R128	4700Ω 2W			
R129	100Ω 1W			
R130	100Ω 1W			
R131	100Ω 1W			
R132	82Ω 1W			
R133	10meg			
R134	150K			
R135	220K			
R136	15K			
R137	3.3meg			
R138	470Ω			
R139	330Ω			
R140	47K			
R141	100K			
R142	47K			
R143	1000Ω			
R144	39K 5%			
R145	5.5meg			
R146	470K ▲			▲ Matched
R147	470K ▲			Pair
R148	8.2meg			
R149	220Ω			
R150	33K			
R151	15000Ω 5%			
R152	68K 2W			
R153	27K			
R154	680Ω 5%			
R155	47K			
R156	8200Ω			
R157	47K 1W			
R158	820Ω			
R159	3900Ω 1W ↩			▲ Matched
R160	3900Ω 1W ↩			Pair
R161	36Ω 5% 1W			

ITEM No.	RATING	REPLACEMENT DATA IRC Part No.	WORKMAN TV Part No.	REMARKS
R162	820Ω 1W			
R163	1meg			
R164	120K			
R165	15K 2W			
R166	470K			
R167	3300Ω			
R168	1meg			
R169	120K			
R170	15K 2W			
R171	470K			
R172	47K			
R173	1meg			
R174	130K			
R175	15K 2W			
R176	470K			
R177	560Ω 3W	PW3-560	3G-560	
R178	12K 4W	PW5-12K	4G-12K	
R179	2700Ω			
R180	5600Ω 5W	PW5-5600	5W-SQ-5600	
R181	27K 4W	PW5-27K	4G-27K	
R182	100K 2W			
R183	100K 2W			
R184	100K 2W			
R185	56K 2W			
R186	1800Ω 10W	PW10-1800	10G-1800	
R187	1800Ω 10W	PW10-1800	10G-1800	
R188	22K 1W			
R189	33K 1W			
R190	79Ω (Cold)			#81B34-2
R191	820K			(2.2meg) *
R192	3300Ω 7W	PW10-3300	10W-SQ-3300	
R193	22K			
R194	100K			
R195	100K 1W			

Note 1. May not be used in some versions.
† Part of T3.

* Alternate Value
# Admiral Part Number

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA ADMIRAL Part No.	Merit Part No.	Miller Part No.	Stancor Part No.	Workman TV Part No.	NOTES
L1	1st Video IF	72C228-3					① Wound on 1meg Resistor.
L2	4.7-25MC Trap	72C228-6					
L3	2nd Video IF	72C228-4					② Wound on 1800Ω Resistor.
L4	3rd Video IF	72C228-5					
L5A	4th Video IF	72B220-1				TB227	③ Wound on 39K Resistor.
B	41.25MC Trap						
L6	RF Choke (12uh)	73B44-8	BC-566	4623	RTC-8522	T986	④ Not used in some versions.
L7	4.5MC Trap	73B316-4					▲ Parallel with 1meg Resistor.
L8	Peaking (63uh)	73B446-21 ①	TV-193 ▲	6110 ▲	RTC 8573 ▲	T302 ▲	
L8	RF Choke (1.8uh)	73B45 231	BC-562	4604	RTC-8516	T990	
L10	Peaking (180uh)	73B44-6	TV 184	6180	RTC-8597	T310	
L11	Peaking (180uh)	73B446-14 ②	TV-184 †	6180 †	RTC-8597 †	T310 †	† Parallel with 1800Ω Resistor.
L12	Peaking (180uh)	73B44-6	TV-184	6180	RTC-8597	T310	
L13	Peaking (180uh)	73B45-1 ③	TV-183	6179	RTC-8596	T309	
L14	Peaking (250uh)	73B46-8	TV-185	6181	RTC-8598	T315	
L15	Peaking (180uh)	73B45-22	TV-184	6180	RTC-8597	T310	
L16	RF Choke (12uh)	73B45-251	BC-566	4622	RTC-8523	T986	
L17	RF Choke (1.8uh)	73B53-231	BC-562	4604	RTC-8516	T990	
L18	RF Choke (1.8uh)	73B53-231④	BC-562	4604	RTC-8516	T990	
L19	1st Sound IF	72B219-3					
L20	2nd Sound IF	72B218-3					
L21	Quadrature	72B219-2				T166	
L22	Chroma Takeoff	72B211-2				T152	
L23	Bandpass	72B212-1				T153	
L24	Burst Phase Det.	72B210-1				T151	
L25	Reactance Plate	72B214-1				T155	
L26	3.58MC Osc.	72B213-2				T154	
L27	RF Choke (1.1uh)	73A47-3	BC-561	4602	RTC-8515	T985	
L28	Peaking (620uh)	73B43-11	TV-205	6146	RTC-8582	T326	
L29	Peaking (620uh)	73B43-11	TV-205	6146	RTC-8582	T326	
L30	RF Choke (12uh)	73B45-251	BC-566	4622	RTC-8523	T986	
L31	RF Choke (12uh)	73B45-251	BC-566	4622	RTC-8523	T986	

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA ADMIRAL Part No.	Merit Part No.	Miller Part No.	Fingers Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.	Workman TV Part No.
L32	Horiz. Osc.	94C194-2							
L33	Horiz. Waveform	94C194-1							
L34	Horiz. Linearity .28MH-1MH	94A176-1							
L35	Right Horiz. Red-Green 3.3MH-7.5MH	94B175-1							
L36	Right Horiz. Red-Green #2 2.5MH-4.5MH	94B175-2							
L37	Horiz. Blue #2 Pri. 3.6-9.4MH Sec. .09-.15MH	94B175-3							
L38	Convergence Yoke Assembly								
A	Green Coil	750C227-506							
B	Blue Coil	750C227-506							
C	Red Coil	750C227-505							
L39	Focus Coil	94C195-1							

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	RATINGS DC RES.	RATINGS INDUCTANCE @ CURRENT 1000 (^)	REPLACEMENT DATA ADMIRAL Part No.	Merit Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.	NOTES
L40	.430A	20Ω	.7 Hy.	74B34-2				C-40X	

TRANSFORMER (POWER)

ITEM No	RATING PRI	SEC 1	SEC 2	REPLACEMENT DATA ADMIRAL Part No.	Merit Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No	NOTES
T1	117V @ 3A	150V @ 1.5A AC	6.3V @ 2A	80D79-1					
	SEC. 3	SEC 4	SEC 5						
	6.3V @ 12.5A								

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA ADMIRAL Part No.	Merit Part No.	Rogers Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No	NOTES
T2	Vert. Output	79D96-1						
T3	Yoke (Horiz. 12MH) (Vert. 33MH)	94AU93-502						
T4	Horiz. Output	79D97-501						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA ADMIRAL Part No.	Merit Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.	NOTES
T5	7600Ω	3-4Ω	79B67-8	A-3020	A-3849	36S48	S-92	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA ADMIRAL Part No.	QUAM Part No.	NOTES
SP1	6" x 9"	PM	3-4Ω	78D88-8 ①②	69A3	① Used in Models: C7N151, C7UN151, L7N161, L7UN161, L7N162, L7UN162, L7N165, L7UN165, L7N172, L7UN172, L7N177, L7UN177
SP2	3½"	PM	8-10Ω	78C164-1 ①	3A15T	
SP3	3½"	PM	8-10Ω	78C164-1 ①	3A15T	
	4" x 6"	PM	3-4Ω	78C165-4 ③		② Used in Models: C7N131, C7UN131, C7N132, C7UN132, C7N133, C7UN133, C7N142, C7UN142, C7N147, C7UN147
						③ Used in Models: T7N180, T7UN180, T7N122, T7UN122, T7N123, T7UN123

POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA ADMIRAL Part No.	RCA Part No.	SARKES TARZIAN Part No.	SYLVANIA Part No.	NOTES
M1	.420A	93B20-1 *	1N1763 *	40R *	SR500 *	* Silicon Type
M2	.420A	93B20-1 *	1N1763 *	40R *	SR500 *	* 3 Section Selenium
M3A	Signal	93B18-1 *				
B	Signal					
C	Signal					

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA ADMIRAL Part No. FUSE	ADMIRAL Part No. HOLDER	LITTELFUSE Part No. FUSE	LITTELFUSE Part No. HOLDER	BUSS Part No. FUSE	BUSS Part No. HOLDER
M4	3AG	3/4A 250V	84A34-8		312.750 (3AG 3/4A 250V)	357001	AGC 3/4	4405
M5	C	3 1/2A 250V	84A30-5	12B103-1	33203.5 (C 3 1/2A 250V)	346007	C 3 1/2	HC 3 1/2 to 3 1/2
M6	1 1/2"	leagth of #22 wire						

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA ADMIRAL Part No.	GENERAL ELECTRIC Part No.	RAYTHEON Part No.	SYLVANIA Part No.	NOTES
M7		93C26-9 *	6GC1 *			* Dual Selenium (Common Cathode Type)
M8		93C21-6 †		1N64	1N64	† Video Det. (Pigtail)
M9		93C21-6 ♦		1N60	1N60	♦ Sound Det. (Pigtail)

ADMIRAL CHASSIS 25D6, 25UD6

FOLDER 1

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M10	Tuner	94A197-514	VHF (VHF Models Only)
	Tuner	94A198-514	VHF with UHF Provisions ("U" Models Only)
	Tuner	94D183-1	UHF ("U" Models Only)
M11	Crystal	93C22-1	3.58MC
M12	Delay Line	72B217-1	
M13	Switch		Normal - Service (DPDT Slide Type)
M14	Magnet Ass'y	750A242-501	Blue Lateral
M15	Magnet Ass'y	94B178-1	Convergence
M16	Magnet Ass'y	94B179-1	Purity Coil Ring
	Printed Board	750A295-528	Video Strip (Includes Components, Less Tubes)
	Printed Board	750A295-530	Picture Strip (Includes Components, Less Tubes)
	Printed Board	750A295-527	Sound Strip (Includes Components, Less Tubes)
	Printed Board	750A295-529	Horiz. AFC, Osc. (Includes Components, Less Tube)
	Printed Board	750A298-501	Convergence (Includes Components)

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

DESCRIPTION	PART NO.	MODELS
Safety Glass	21C142-1	All Models
Mask	23E423-1	"
Knob-VHF Channel Selector	20D46-3	"
Knob-UHF Channel Selector	20C49-2	"
Disk-VHF Channel Indicator	15C2317-2	"
Knob-UHF Channel Indicator	33C375-6	"
Knob-Fine Tuning	33B374-3	"
Knob-Brightness, Volume	20C49-1	"
Knob-Color Fidelity	33C375-4	"
Knob-Color Intensity	33C375-5	"
Knob-Contrast, Horiz. Hold, Vert. Hold, Tone	33B376-2	"

DESCRIPTION	PART NO.	MODELS
Cabinet	35E614-1	C71N131, C71UN131
Cabinet	35E614-2	C71N132, C71UN132
Cabinet	35E614-3	C71N133, C71UN133
Cabinet	35E615-2	C71N142, C71UN142
Cabinet	35E615-7	C71N147, C71UN147
Cabinet	35E612-1	C71N151, C71UN151
Cabinet	35E613-1	L71N161, L71UN161
Cabinet	35E613-2	L71N162, L71UN162
Cabinet	35E613-3	L71N163, L71UN163
Cabinet	35E611-2	L71N172, L71UN172
Cabinet	35E611-7	L71N177, L71UN177

TUNER PARTS LIST AND DESCRIPTIONS

94A197–514

TUBES

• GENERAL ELECTRIC •			• RAYTHEON •		• SYLVANIA •	
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	6FH5	V202	Mixer - Osc.	6EA8

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C202	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C203	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C204	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C205	33 10%		DI-33	DD-330	L10Q33	CCD-330	GP433	10TS-Q33
C206	27 N750 10%		N750-DI 27	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCC-Q27
C207	1000		EF-001	MFT-1000		CCF-102	CT280A	
C208	.033 200V		P288N-033	DD-303	CUB6S33	4DP-2-333	GEM-4133	6TM-S33
C209	2-10			829-10				
C210	.3-1.9			829-3		CV-1	CT565	
C211	82							
C212	47							
C213	2 NPO 10%		NPO-SI 2.0	TCZ-2R2	C10V2C	CCTO-2R2	CNO-522	10TCC-V22
C214	.5-3			829-3		CV-1	CT565	
C215	33 N750		N750-DI 33	DTN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C216	68 N750 10%		N750-DI 68	DTN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
C217	10 5%		NPO-SI 10	TCZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C218	10 N220 5%					*		10TCR-Q10
C219	680		DI-680	DD-681	BYA10T68	CCD-681	GP368	10TS-T68
C220	1000		EF-001	MFT-1000		CCF-102	CT280A	
C221	1000		EF-001	MFT-1000		CCF-102	CT280A	
C222	1000		EF-001	MFT-1000		CCF-102	CT280A	
C223	1000		EF-001	MFT-1000		CCF-102	CT280A	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

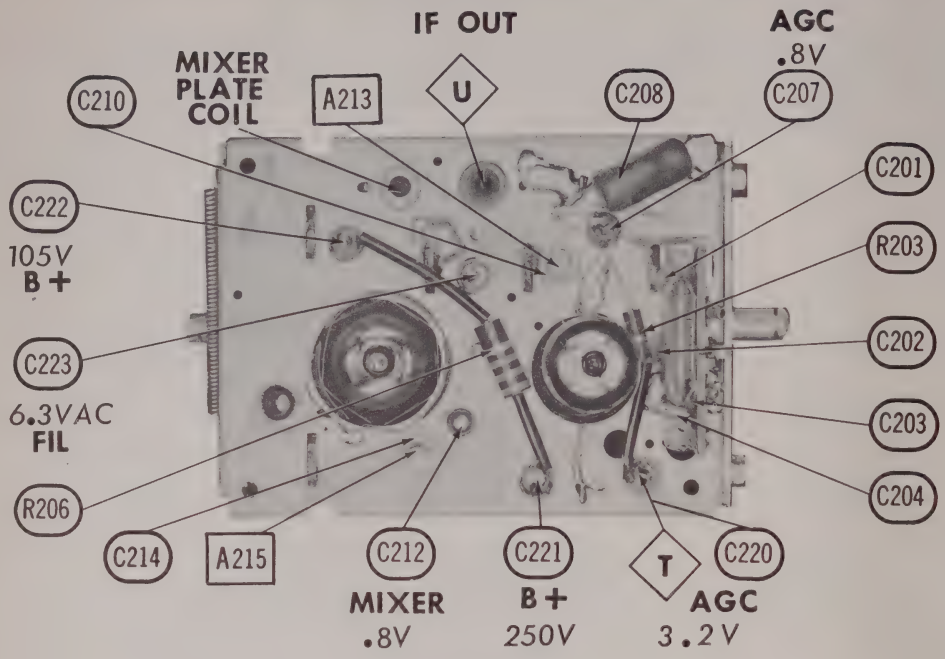
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R201	2700Ω				R207	100K			(220K) *
R202	47K				R208	18Ω			
R203	2.2meg				R209	1000Ω			
R204	11K 3W				R210	5600Ω			
R205	8200Ω				R211	1000Ω			
R206	33K 1W				R212	10K			

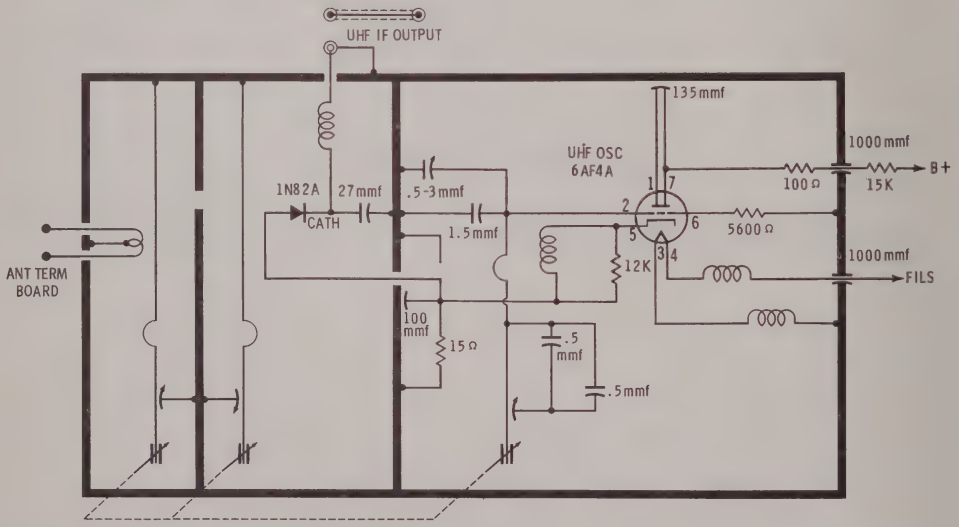
* Alternate Value

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ADMIRAL PART No.	REPLACEMENT DATA
K201	RF Amp. Cath. Filter	27mmf, 47K		



VHF TUNER 94A197-514 - TOP VIEW



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UHF TUNER 94D183-1

TUNER ALIGNMENT INSTRUCTIONS (cont)

UHF IF ALIGNMENT - DISCONNECT CABLE FROM UHF TUNER (TO VHF TUNER).

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
22.	High side thru adaptor (Fig. 203) to point ◇. Low side to chassis.	44MC (10MC Swp.)	41.25MC 45.75MC	UHF	Connect 330mmf capacitor in series with a 180Ω resistor from plate of Mixer (V202) to chassis with resistor next to chassis. High side of scope thru demodulator probe to junction of capacitor and resistor. Low side to chassis.	A228, A229	Use only enough sweep generator output to provide a usable pattern on scope. Adjust A228 and A229 for response similar to Fig. 204.
23.	Across UHF terminals with 120Ω in each lead. Reconnect cable from UHF tuner to VHF tuner. Connect separate marker generator loosely to grid of 1st Video IF Amp. (V1).	Tune over entire UHF range	42.5MC 45.0MC 45.75MC	Tune over UHF range	Across Video Det. Load		Use only enough sweep generator output to provide a usable pattern on scope. Check tracking across UHF band if necessary, retouch A228 and A229 for response similar to Fig. 205.

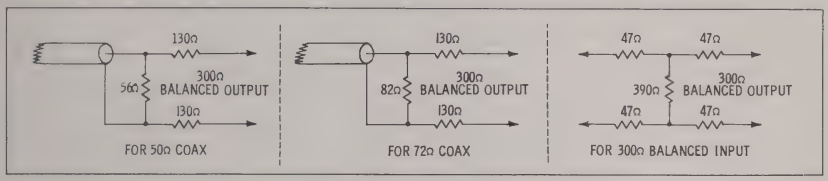


FIG. 201

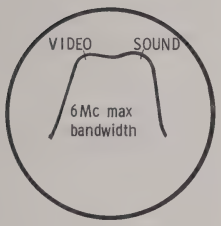


FIG. 202A

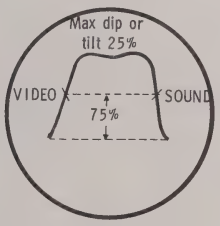


FIG. 202B

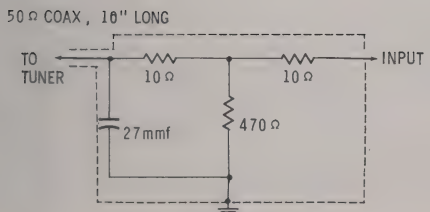


FIG. 203

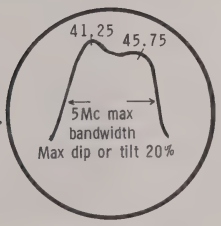


FIG. 204

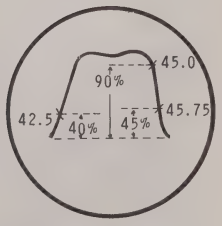
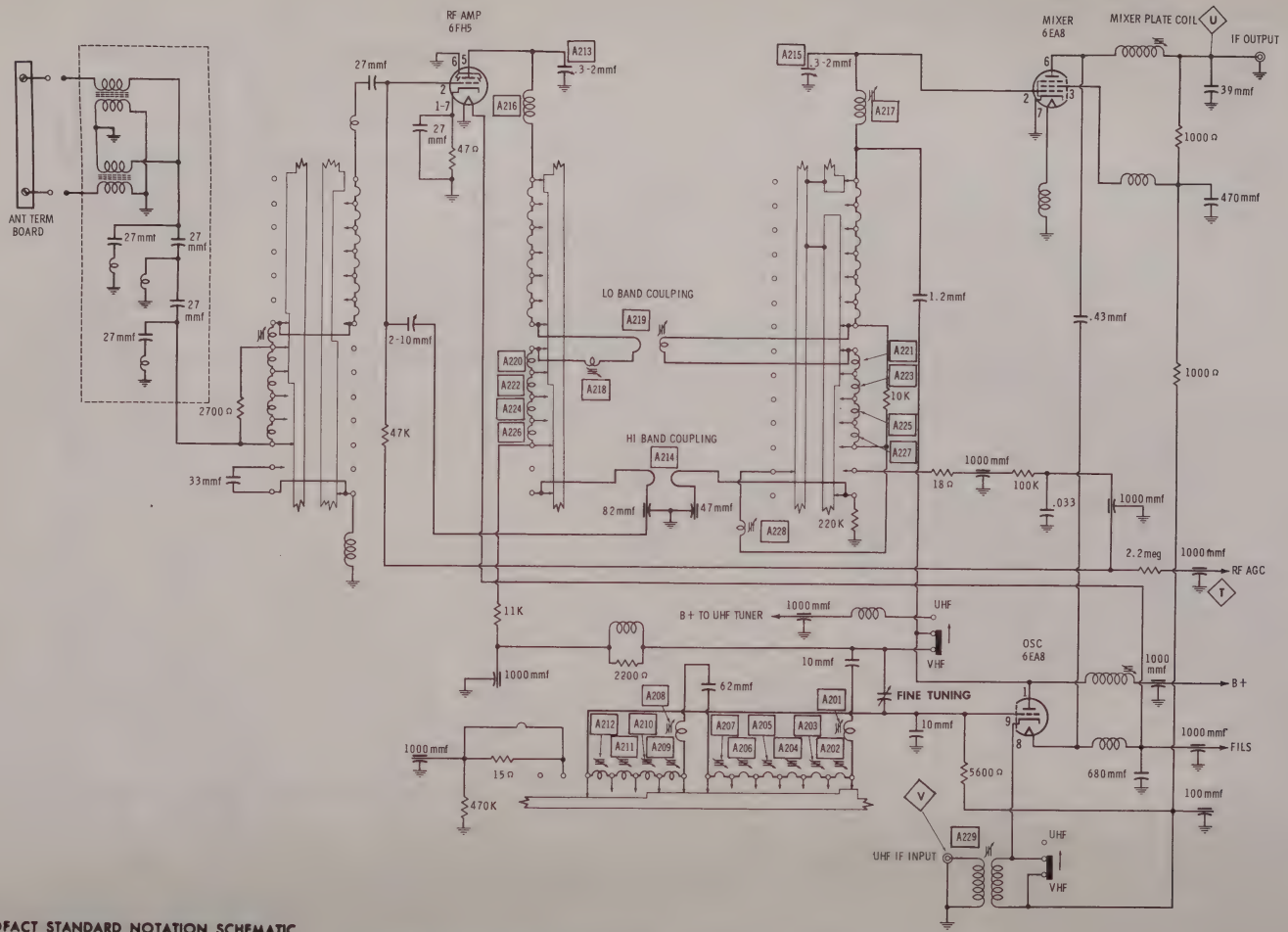


FIG. 205



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VHF TUNER WITH UHF PROVISIONS 94A198-514

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	220K	1550Ω	FIL	FIL	▪220Ω	▪220Ω	1500Ω		
V2	6GM6	†80K	INF	FIL	FIL	†3400Ω	†3400Ω	▪68Ω		
V3	6AW8A	0Ω	4.7meg	†35K	FIL	FIL	150Ω	.1Ω	†6900Ω	†6900Ω
V4	6AW8A	0Ω	6meg	370K	FIL	FIL	1500Ω	6000Ω	†45K	†12K
V5	12BY7A	● 400Ω	● 700K	NC	FIL	FIL	0Ω	†5000Ω	†23K	0Ω
V6	6DT6A	57K	● 1000Ω	FIL	FIL	900K	†4000Ω	● 470K		
V7	6EW6	5.5Ω	47Ω	FIL	FIL	†7000Ω	†7000Ω	0Ω		
V8	6DT6A	5.5Ω	470Ω	FIL	FIL	†580K	†27K	470K		
V9	6AQ5A	NC	470Ω	FIL	FIL	†950Ω	†590Ω	● 0Ω		
V10	6EM7	● 2.2meg	†390Ω	3000Ω	● 700K	● ‡3meg	0Ω	FIL	FIL	
V11	6CG7	†45K	1meg	1000Ω	FIL	FIL	†60K	†220K	0Ω	0Ω
V12	6DQ5	10meg	FIL	0Ω	†12K	10meg	0Ω	FIL	†12K	TOP CAP ‡25Ω
V13	6AU4GTA	NC	NC	¶	NC	†40Ω	NC	FIL	FIL	
V14	3A3	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡650Ω
V15	1V2	NC	NC	NC	66meg	66meg	TP	NC	NC	‡25Ω
V16	6BK4	†40Ω	FIL	NC	NC	● 900K	NC	FIL	NC	TOP CAP INF
V17	6AU6	220K	0Ω	FIL	FIL	†1300Ω	†1300Ω	390Ω		
V18	6EW6	45K	39K	FIL	FIL	†1000Ω	†820Ω	0Ω		
V19	6AL5	5.8meg	5.8meg	FIL	FIL	220Ω	0Ω	220Ω		
V20	6GH8	†50K	47K	†48K	FIL	FIL	†9000Ω	0Ω	680Ω	6meg
V21	12AZ7	†4700Ω	● 100Ω	820Ω	FIL	FIL	†4700Ω	● 100Ω	820Ω	FIL
V22	6CG7	†15K	1meg	560Ω	FIL	FIL	†15K	1meg	560Ω	0Ω
V23	6CG7	†100K	1meg	390Ω	FIL	FIL	†12K	1meg	560Ω	0Ω
V24	21CYP22A	FIL	†125K	● ‡330K	†8000Ω	● †5200Ω	†125K	● ‡140K	Pin 9 67meg	Pin 11 ● ‡110K
		Pin 12 †125K	Pin 13 ● †5000Ω	Pin 14 FIL						
V201	6FH5	47Ω	3.3meg	FIL	FIL	†12K	0Ω	47Ω		
V202	6EA8	†9000Ω	100K	†35K	FIL	FIL	†35K	0Ω	†35K	†40K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM OUTPUT OF M1.
‡ MEASURED FROM PIN 3 OF V13.
▪ MEASURED FROM PIN 2 OF V2.

NC NO CONNECTION
TP TIE POINT

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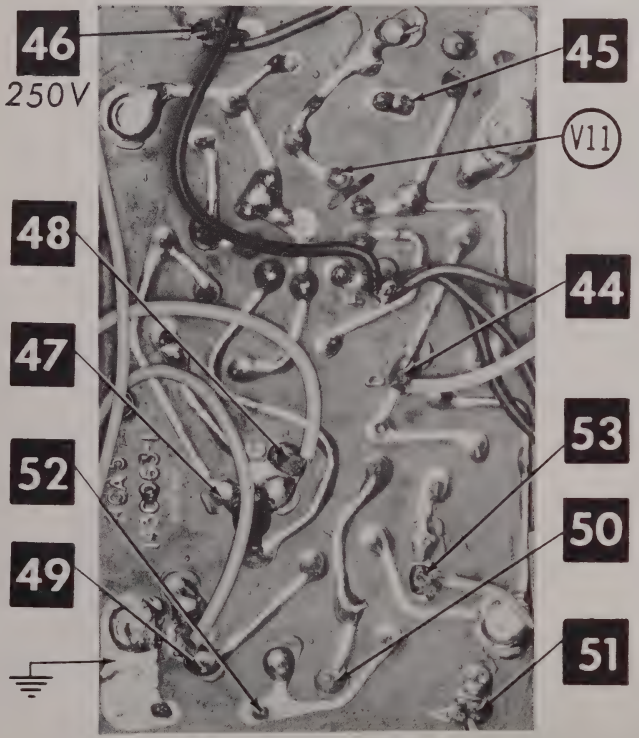
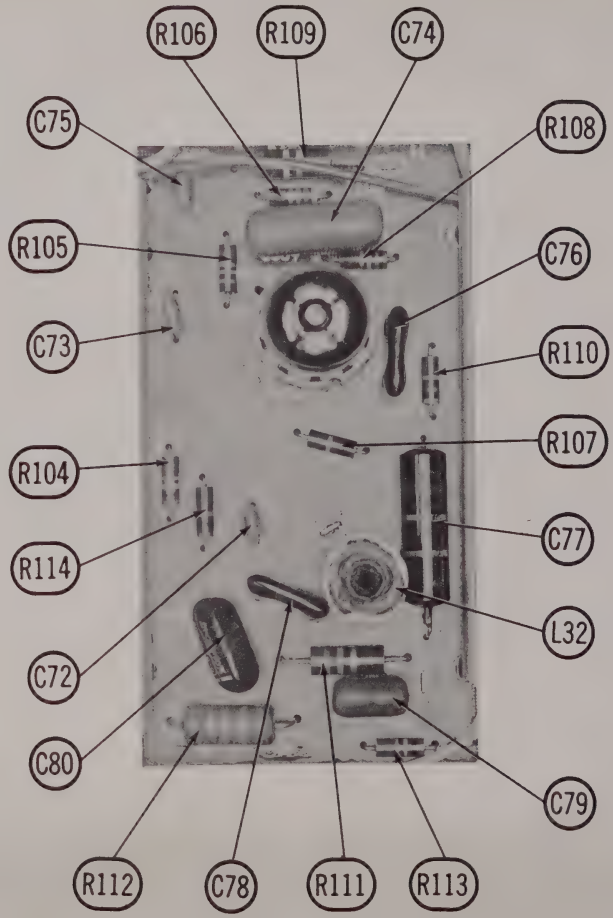
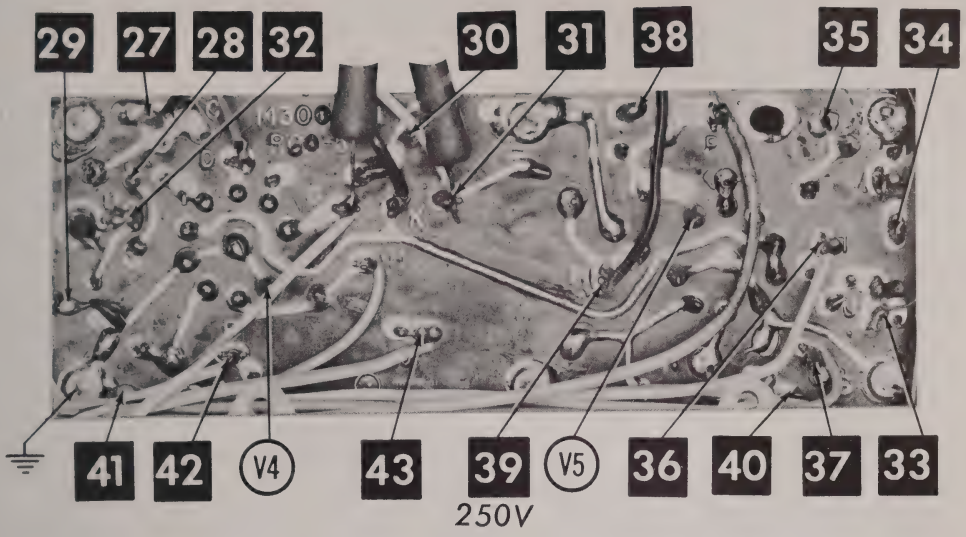
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED





HORIZ. OSC. PRINTED BOARD



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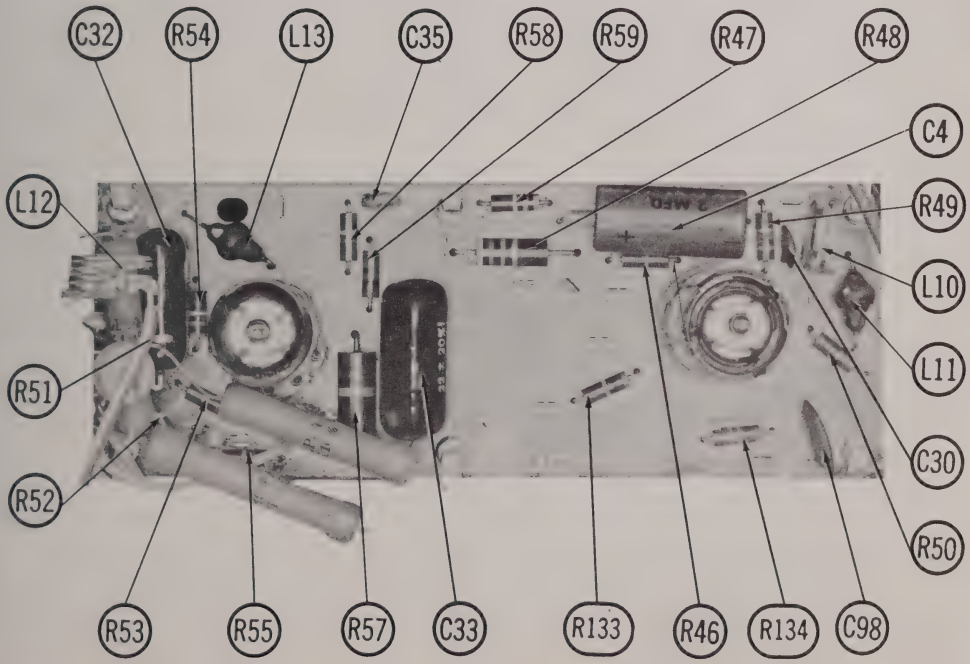
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

VIDEO, SYNC, COLOR KILLER PRINTED BOARD



VIDEO, SYNC, COLOR KILLER PRINTED BOARD

MISCELLANEOUS ADJUSTMENTS

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Suggested Alignment Tools: Bl, R-G-l, R-G-2 .....
GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

Connect a 0-500MA meter in series with the cathode circuit of the Horizontal Output tube (Vl2). Connect a .47mfd capacitor across the meter terminals. Connect a 0-1500 microammeter in series with the cathode circuit of the HV Regulator (Vl6). Connect the Vertical Amp. of the scope to point (K). Low side to chassis. Connect the DC probe of the VTVM thru a high voltage probe to the High Voltage Rectifier "cup". Common to chassis.
Set the Focus to the center of its range. Set the High Voltage Adjust control at two thirds clockwise rotation.
Tune the receiver to a station signal and synchronize the picture. Adjust the Horizontal Hold (Waveform Slug) for a waveform similar to Fig. ll with the round and sharp peaks at equal amplitudes. Keep the picture in sync during this adjustment with the Horizontal Frequency Slug (B3). Adjust the Horizontal Linearity Slug (B4) for MINIMUM current indication on the 500MA meter, not to exceed 200MA.
Adjust the High Voltage Adjust for 24KV on the VTVM. Check the current reading on the 0-1500 microammeter. It should not exceed 850 microamps.

AGC ADJUSTMENT

Tune in the strongest station signal in the area. Connect the Vertical Amp. of the scope thru a low capacity probe to point (E). Common to chassis. Adjust the AGC control for ll volts peak to peak on the scope.

COLOR AFC ALIGNMENT

Set the Color Fidelity control to the center of its range. Turn the Killer control fully counterclockwise. Connect the DC probe of the VTVM thru 470K to pin 1 (cathode) of the Phase Detector (Vl9). Common to chassis. Connect the Color Bar Generator to the antenna terminals. Connect a short clip lead from pin 1 (grid) of the Burst Amplifier to chassis. Adjust Al5 for maximum deflection on the VTVM. If no reading is obtained the 3.58MC Osc. is not operating, in which case Al7 should be adjusted to start the Osc. and make the color lock in on the screen. Adjust Al5 for maximum deflection.
Adjust Al6 for maximum deflection on the VTVM making sure that the 3.58MC Osc. is running and locked in.
Remove the clip lead from the grid of the Burst Amplifier. Connect clip lead from TP-1 to chassis. Disconnect VTVM from pin l of the Phase Detector. Adjust Al7 for zero beat while observing the screen. (Color bars will stand still on the screen or drift very slowly).
Remove the clip lead from TP-1 and repeat adjustment of Al7 using a low chroma low level signal. Adjust for zero beat and best hold.
Connect the Vertical Amp. of scope to TP-2. Low side to chassis. Observe bar pattern on scope and retouch Al6 if necessary to obtain proper response curve similar to R-Y signal in Fig. 12 with equal change when rotating the Color Fidelity control from one extreme to the other. Return the Color Fidelity control to the center of its range. Move the scope connection to TP-4. Check for B-Y signal as shown in Fig. 12.
Move the scope connection to TP-3. Check for G-Y signal as shown in Fig. 12.
With a strong black and white signal, adjust the Killer Threshold control so that all color disappears from the picture. Recheck with a color signal to make sure that the setting is not killing on color.

PRELIMINARY CONVERGENCE ADJUSTMENT

Connect the RF output of a white dot generator to the antenna terminals. Preset all Red, Green and Blue Horizontal and Vertical Convergence controls and coils to the center of their ranges.

Adjust the Red, Green and Blue Convergence Magnets and the Lateral Magnet to produce a white dot in the center of the screen. Keep the receiver in sharp focus while making these adjustments. The Convergence Magnets may be reversed to produce a greater range of adjustment if necessary.

COLOR PURITY ADJUSTMENTS

If necessary, demagnetize picture tube and associated components. Set the red tabs of the Purity Magnet together.
Loosen the yoke clamp and slide the deflection yoke to the rear as far as possible. Shunt TP-3 & TP-4 to chassis thru individual 100K Resistors.

Slide the Purity Magnet around the neck of the picture tube and at the same time spread the red tabs apart to produce a uniform red screen area at the center of the screen. Move the yoke forward and adjust for best overall red screen without neck shadow. Tighten yoke clamp.

GRAY SCALE ADJUSTMENT

Turn the Bias and Screen controls fully counterclockwise. Move the "Normal-Service" switch on the rear apron of the chassis to "Service" position. Advance the Screen controls so that each control just produces a horizontal line on the screen.
If any one of the Screen controls fail to provide a line, advance Bias control slightly. Readjust other screen controls so the screen is just lighted. Return the "Normal-Service" switch to "Normal". Alternately adjust the Red and Green Video Drive controls to produce a normal black and white picture. Check the picture from lowlight areas to highlight areas at all brightness levels to check the picture for proper tracking.

VERTICAL CONVERGENCE ADJUSTMENTS

Recheck the "Preliminary Convergence Adjustments" for correct setting of the Red, Green and Blue Magnets and Lateral Magnet to produce a white dot in the center of the screen. Loosen the two screws holding the Convergence Board. slide the board to the left and remove. Fasten the board to the two screws provided on the top rear rail of the cabinet with the controls facing forward so that convergence adjustments may be made from the front of the receiver. Slots are provided in the lower edge of the board for making this mounting.
Switch the dot generator to vertical bars. Connect a 100K Resistor from TP-4 to chassis.
Referring to the center vertical bar, adjust the Vertical R-G Master Amp. control to converge the red and green bars at the bottom end. Adjust the Vertical R-G Master Tilt to converge the red and green bars at the top end. Touch up both controls for best convergence along the entire length of the center vertical bar.
Switch the generator to horizontal bars. Referring to the center portion of the lower horizontal bars, adjust the Vertical R-G Differential Amp. control to converge the red and green bars. Adjust the Vertical R-G Differential Tilt control to converge the center portion of the top horizontal green and red bars. Retouch both controls until the center portion of all red and green horizontal bars are converged.
Switch the generator to the dot or cross hatch pattern and converge the center area of the screen using the convergence magnets. Switch back to the horizontal bars. Remove the 100K Resistor from point TP-4. Advance the Vertical Blue Amp. control to cause displacement of the center portion of the bars at the top and bottom of the screen. Adjust the Vertical Blue Tilt control to cause the vertical displacement of the center portion of the horizontal bars to be equal at top and bottom. Switch the generator to dots or cross hatch and again converge the center area of the screen. Retouch the Vertical Blue Tilt and Amp. controls for best convergence along the vertical center of the screen.

HORIZONTAL CONVERGENCE ADJUSTMENTS

Switch the generator to cross hatch pattern and recheck convergence in the center area.
Adjust B-1 to make the blue line at the right center a straight line.
Adjust B-2 to make the blue line from the center to the left side of the screen a straight line.
Adjust R-G-1 to make the vertical lines at the right side of the screen converge.
Adjust R-G-2 to make the horizontal red and green lines at the right side converge.
Adjust B-1 to make the blue line at the right center fall on the converged red and green line. Retouch R-G-1 for convergence of the vertical lines at the right side.
Adjust R-G-3 to make vertical lines at the left side converge. Adjust R-G-4 to make the red and green horizontal lines at the left side of the screen converge. After adjusting R-G-4 repeat the adjustment of R-G-3 to compensate for any interaction. Retouch B-2 to make the blue line at the left center fall on the converged red and green lines.
The screen should now show proper convergence.
After completion of the vertical and horizontal convergence, repeat the Gray Scale Adjustment.

ALIGNMENT INSTRUCTIONS (cont)

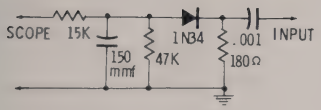


FIG. 1

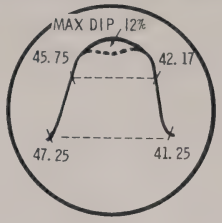


FIG. 2

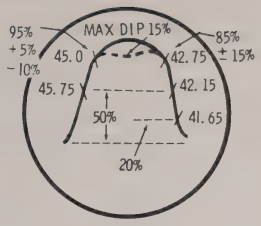
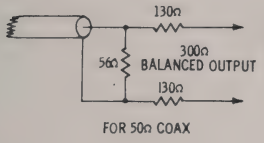
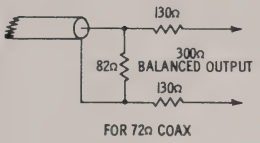


FIG. 3





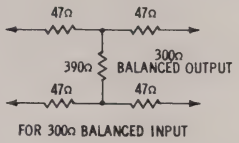


FIG. 4

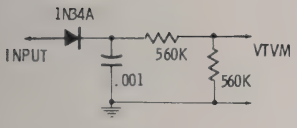


FIG. 5

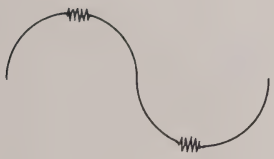


FIG. 6

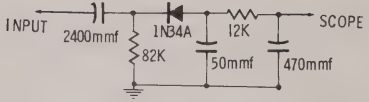


FIG. 7

FIG. 8

FIG. 9

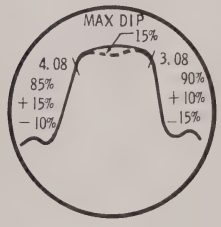


FIG. 10

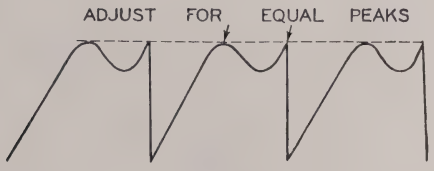


FIG. 11

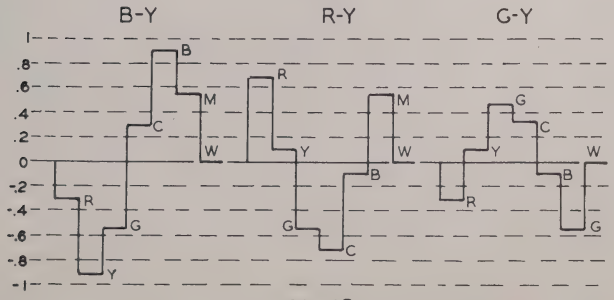
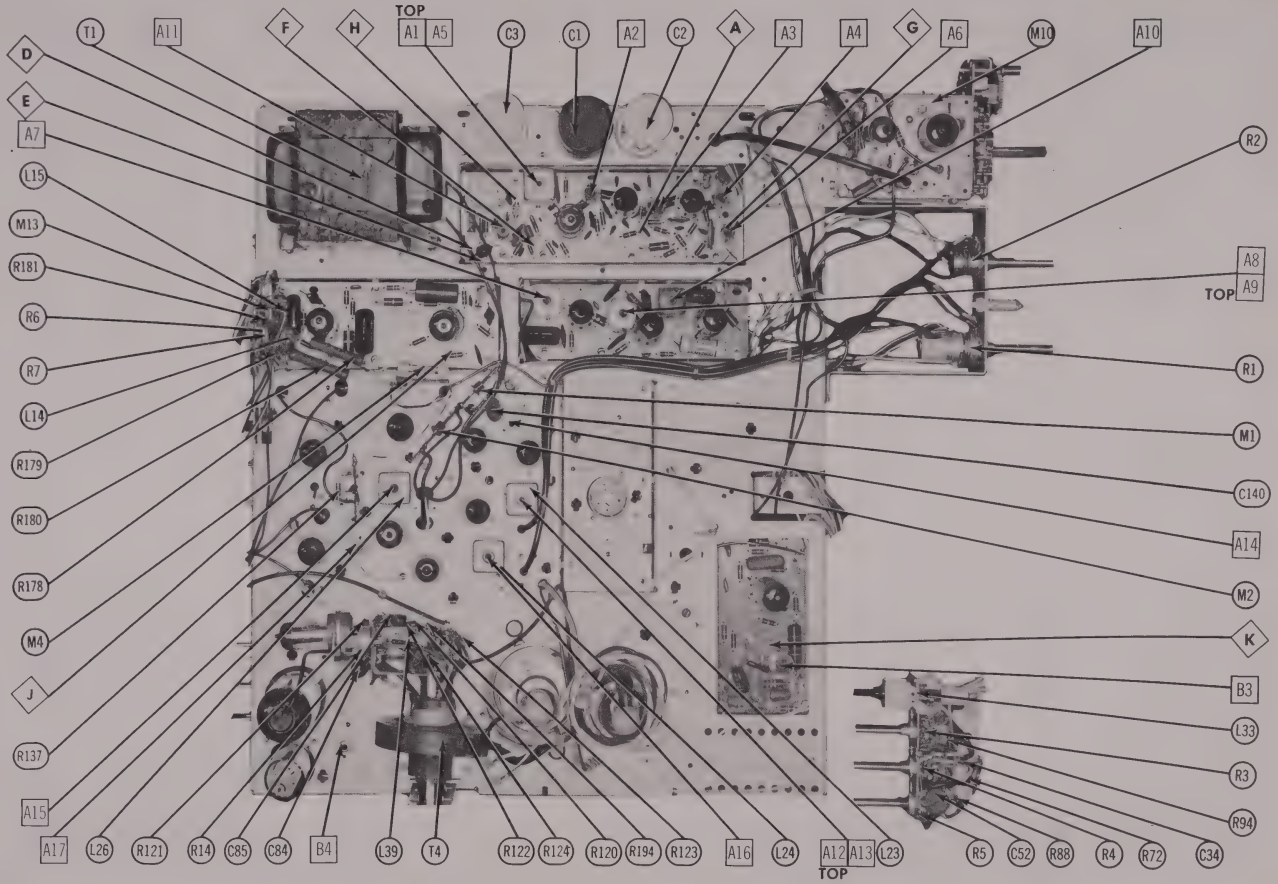
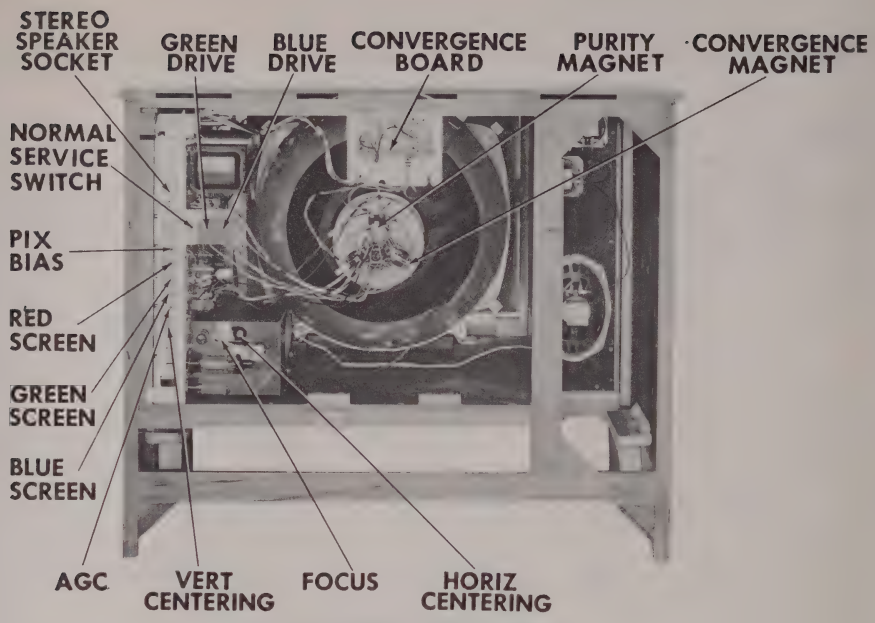


FIG. 12



CHASSIS - TOP VIEW



CABINET—REAR VIEW

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

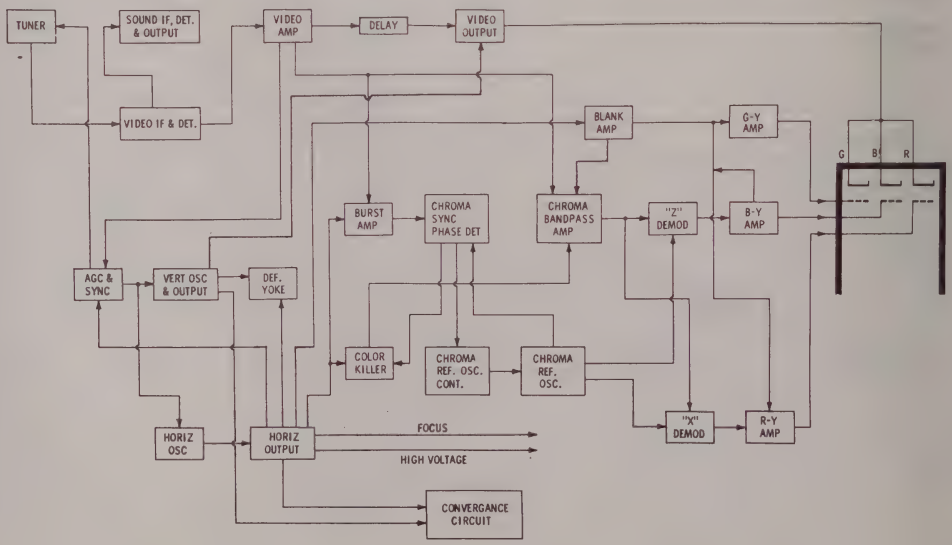
1. Remove 10 push-on type knobs at front.
2. Remove 8 wood screws holding rear cover. Remove rear cover.
3. Disconnect yoke leads, picture tube socket, hi voltage lead, speaker leads, pilot lamp, blue lateral grounding spring, and plug from convergence board.
4. Remove 1 screw (inside cabinet) holding control panel.
5. Remove 4 chassis bolts.
6. Remove chassis.

PICTURE TUBE REMOVAL

It is necessary to remove the chassis and convergence control board for picture tube removal.

SAFETY GLASS REMOVAL

Remove trim strip (at top front). Remove 3 screws holding top of mask; remove mask. Remove 1 screw in each safety glass mounting bracket while supporting safety glass. Remove safety glass.



BLOCK DIAGRAM

PHOTOFACT® Folder

AIRLINE MODELS
WG-4225A, WG-4325A

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

AIRLINE MODELS
WG-4225A, WG-4325A

MODEL WG-4225A

AIRLINE MODELS
WG-4225A, WG-4325A

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The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

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AIRLINE MODELS
WG-4225A, WG-4325A

AIRLINE MODELS
WG-4225A, WG-4325A

MODEL WG-4225A

CAUTION

ONE SIDE OF AC LINE CONNECTED TO CHASSIS.

Care should be exercised when connecting test equipment or physically contacting chassis. Isolation devices employed by manufacturer should be checked and properly connected before returning receiver to owner.

AIRLINE MODELS
WG-4225A, WG-4325A

TRADE NAME	Airline Models WG-4225A, WG-4325A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Avenue, Chicago, Illinois
TYPE SET	Television Receiver
TUBES	VHF - Fourteen, UHF - Fifteen
POWER SUPPLY	105-125 Volts AC, 60 Cycle RATING VHF: 150 Watts, 1.45 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

It is necessary to remove the chassis and picture tube for safety glass cleaning or removal. (See "Disassembly Instructions", page 16.)

FUSE DEVICE

A 7.5Ω fusible resistor is used for low voltage power supply protection. (For location, see "Tube Placement Chart".)

TUNER OSCILLATOR ADJUSTMENT

To touch up the VHF Oscillator, remove Channel Selector and Fine Tuning Knobs.

AGC

The AGC may be varied by means of an AGC Control. (For location, see "Tube Placement Chart".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The horizontal frequency slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

HORIZONTAL DRIVE

The horizontal drive may be varied by a Horizontal Drive trimmer (B1). (For location, see "Tube Placement Chart".)

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Buzz Control for MINIMUM buzz and maximum sound. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

SET 540 FOLDER 2

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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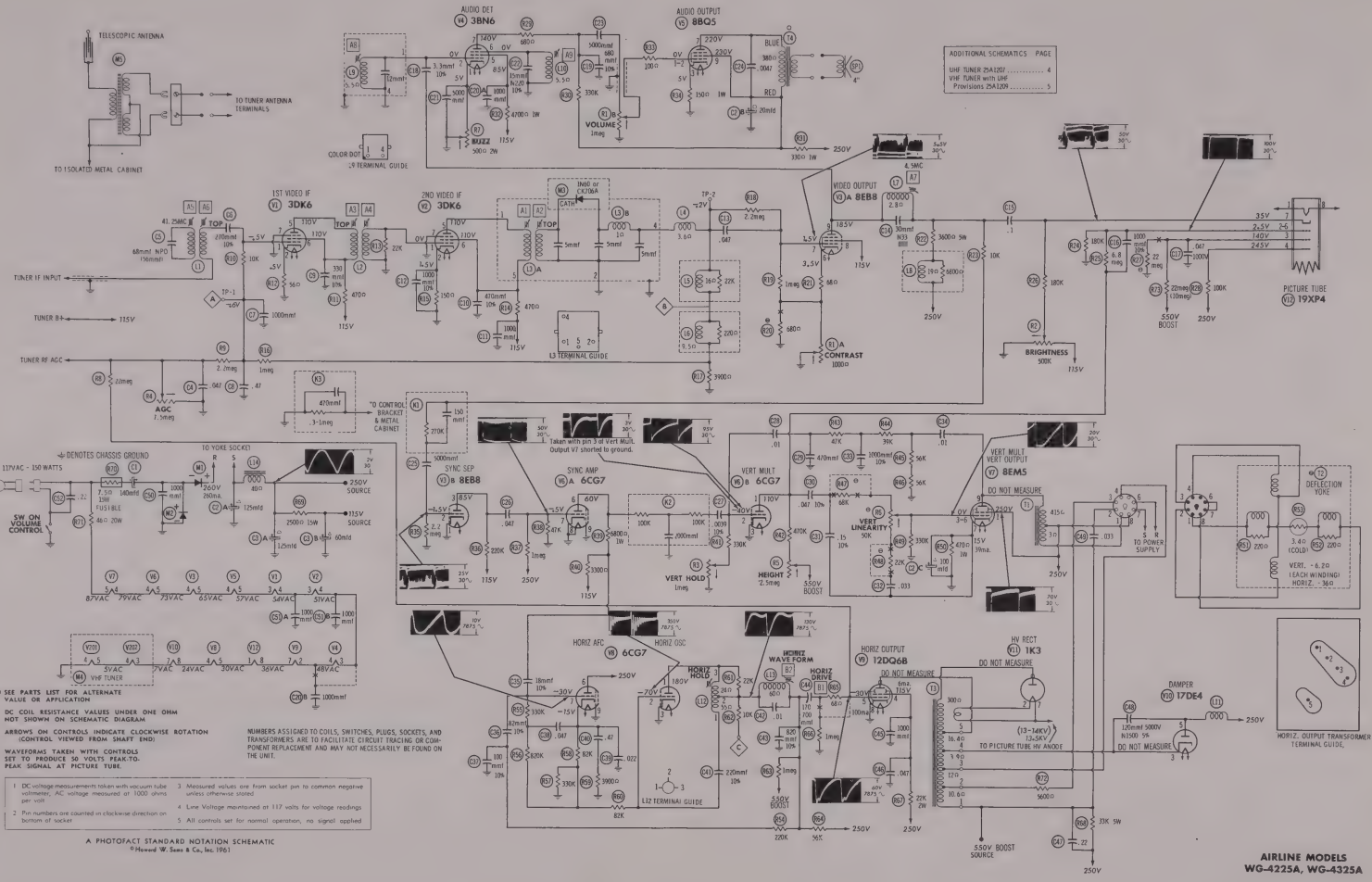
AUDIO DET V4 3BN6
AUDIO OUTPUT V5 8BQ5
1ST VIDEO IF V1 3DK6
2ND VIDEO IF V2 3DK6
VIDEO OUTPUT V3 A 8EB8
SYNC SEP V3 B 8EB8
SYNC AMP V6 A 6CG7
VERT MULT V6 B 6CG7
VERT MULT VERT OUTPUT V7 8EM5
HORIZ AFC V8 6CG7
HORIZ OSC
HORIZ WAVE FORM
HORIZ OUTPUT V9 12DQ6B
HV RECT V11 1K3
DAMPER V10 17DE4
PICTURE TUBE V12 19XP4
TELESCOPIC ANTENNA
TO TUNER ANTENNA TERMINALS
TO ISOLATED METAL CABINET
COLOR DOT 9 TERMINAL GUIDE
TUNER IF INPUT
TUNER B+
TUNER RF AGC
AGC
VOLUME
CONTRAST
BRIGHTNESS
VERT HOLD
HEIGHT
VERT LINEARITY
HORIZ HOLD
HORIZ DRIVE
BOOST
DEFLECTION YOKE
TO POWER SUPPLY
TO YOKE SOCKET
DENOTES CHASSIS GROUND
117VAC - 150 WATTS
SW ON VOLUME CONTROL
FUSIBLE
250V SOURCE
115V SOURCE
VHF TUNER
L3 TERMINAL GUIDE
L12 TERMINAL GUIDE
HORIZ. OUTPUT TRANSFORMER TERMINAL GUIDE
TO PICTURE TUBE HV ANODE
550V BOOST SOURCE
DO NOT MEASURE
ADDITIONAL SCHEMATICS PAGE
UHF TUNER 25A1207 4
VHF TUNER with UHF Provisions 25A1209 5
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
1 DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt
2 Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied
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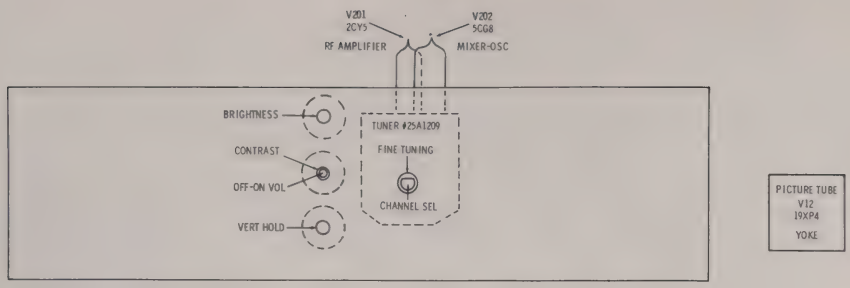
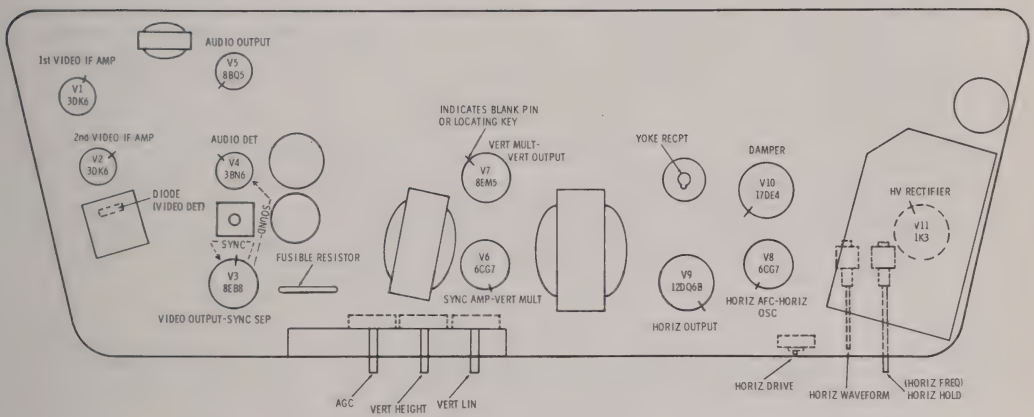
AIRLINE MODELS WG-4225A, WG-4325A

TUBE PLACEMENT CHART



TOP VIEW



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

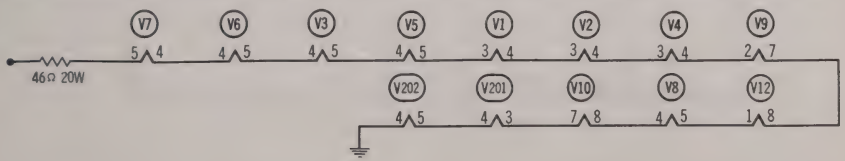
POWER SUPPLY FAILURE
No raster, no sound Fusible Resistor (B+), Rectifiers (B+)

SWEEP FAILURE
No raster, has sound V8, V9, V10, V11, V12
No vertical deflection V6, V7
Poor vert. linearity or foldover V6, V7
Poor horiz. linearity or foldover V8, V9, V10
Narrow picture V8, V9, V10, Rectifiers (B+)
Vert. off freq. V6, V7
Horiz. off freq. V8

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, Diode (Video Det.), V3
No pic, no sound, has snow V201, V202
No pic, has sound, has raster V3, V12
Has pic, no sound V4, V5

SYNC FAILURE
No vert. sync V3, V6
No horiz. sync V3, V8
No vert. or horiz. sync V3, V8

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



SET 540 FOLDER 2

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Use an ISOLATION TRANSFORMER TO PROTECT the Test Equipment.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the negative lead of a 7 volt bias supply to point (A). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.01mfd	High side to pin 1 (grid) of 2nd Video IF. Low side to chassis. Adjust output for 4VP-P on scope.	44.0MC (10MC Swp)	42.4MC 45.75MC	Any non-interfering channel	Vert. Amp. thru 47K to point (B). Low side to chassis. (Across Video Det. load)	A1, A2	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. A1 controls marker position and A2 controls gain and symmetry.
2.	"	High side to pin 1 (grid) of 1st Video IF. Low side to chassis. Adjust for 4VP-P on scope.	"	42.4MC 43.5MC 44.5MC 45.75MC	"	"	A3, A4	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown. A3 controls marker position and A4 controls gain and symmetry.
3.	Direct	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	"	41.25MC 42.4MC 43.5MC 44.5MC 45.75MC	"	"	A5, A6, & Mixer Plate Coil	Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. Adjust A5 to place 41.25MC marker in trap notch.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.01mfd	High side to pin 2 (grid) of Video Output. Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	AC probe to pin 7 (cathode) of picture tube. Common to chassis. Use 0-10V AC scale.	A7	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT

Tune in a TV station and reduce the signal strength at the antenna terminals until a hiss is heard in the sound similar to super-regeneration.
Adjust A8, A9 and the Buzz control for maximum undistorted sound with MINIMUM buzz.
If the hiss disappears during adjusting, further reduce the signal strength.

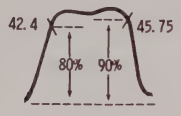


FIG. 1

FIG. 2

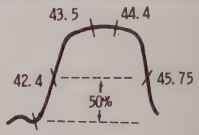
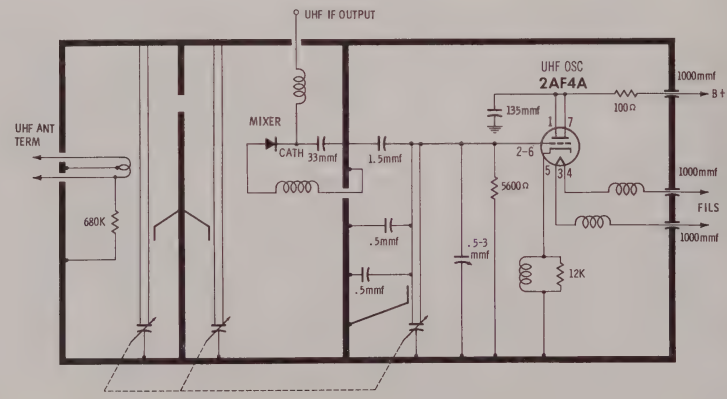


FIG. 3



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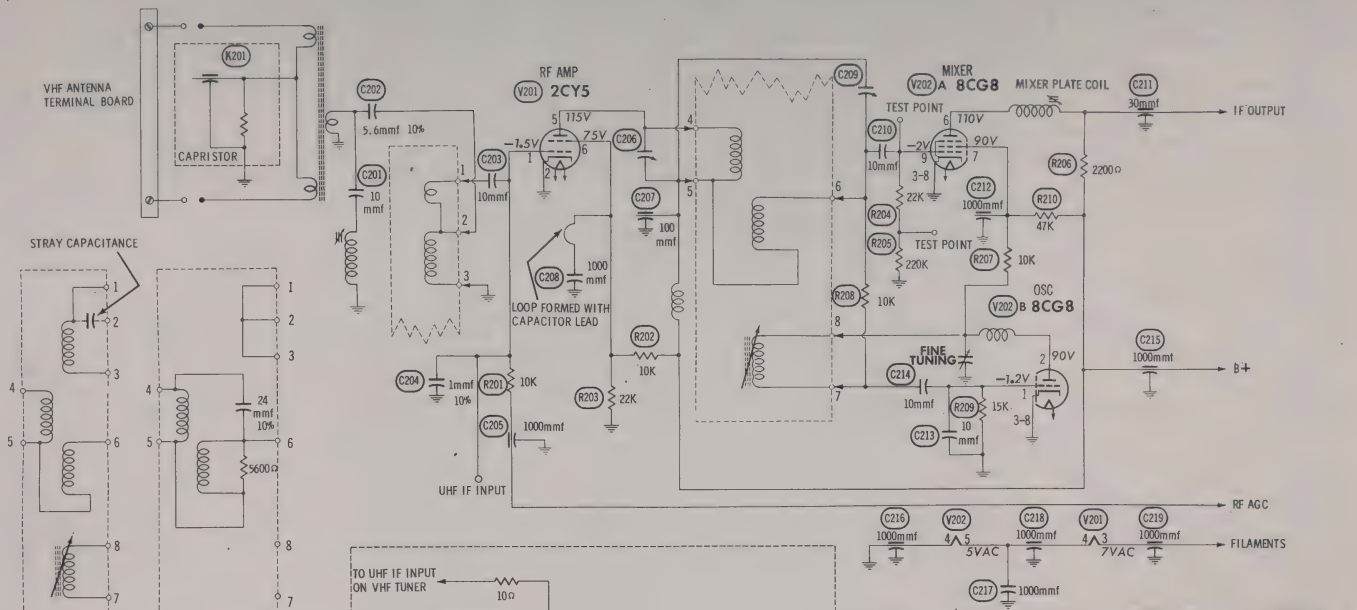
UHF TUNER 25A1207



TUNER ALIGNMENT

Suggested Alignment Tools: GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

VHF OSCILLATOR ALIGNMENT

The individual channel adjustment screws are accessible one at a time, thru a hole in the front of the tuner, as the Channel Selector is rotated. Set the Fine Tuning to the center of its range and switch to channel to be adjusted and adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.

UHF TUNER ALIGNMENT

This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.

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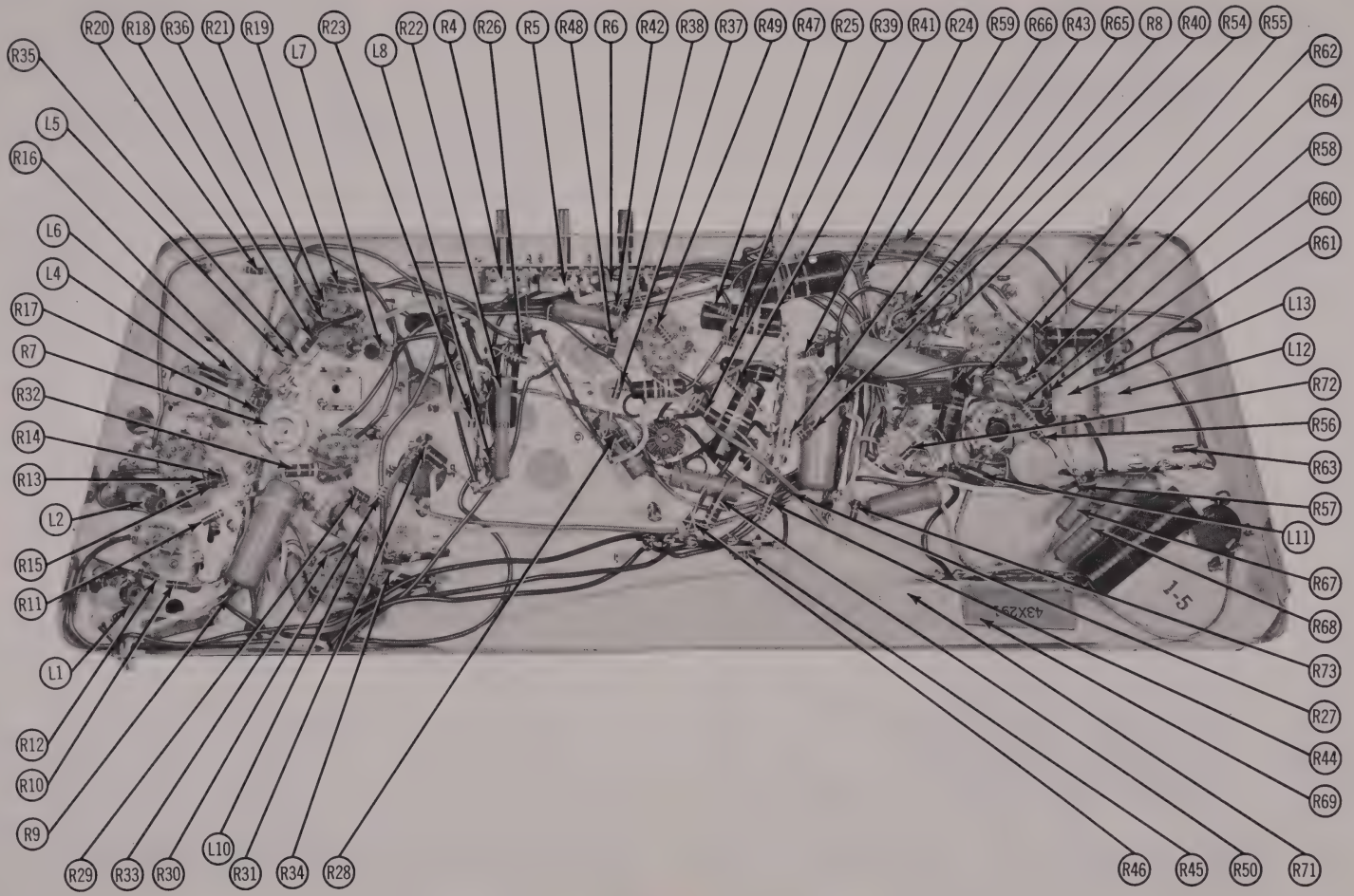
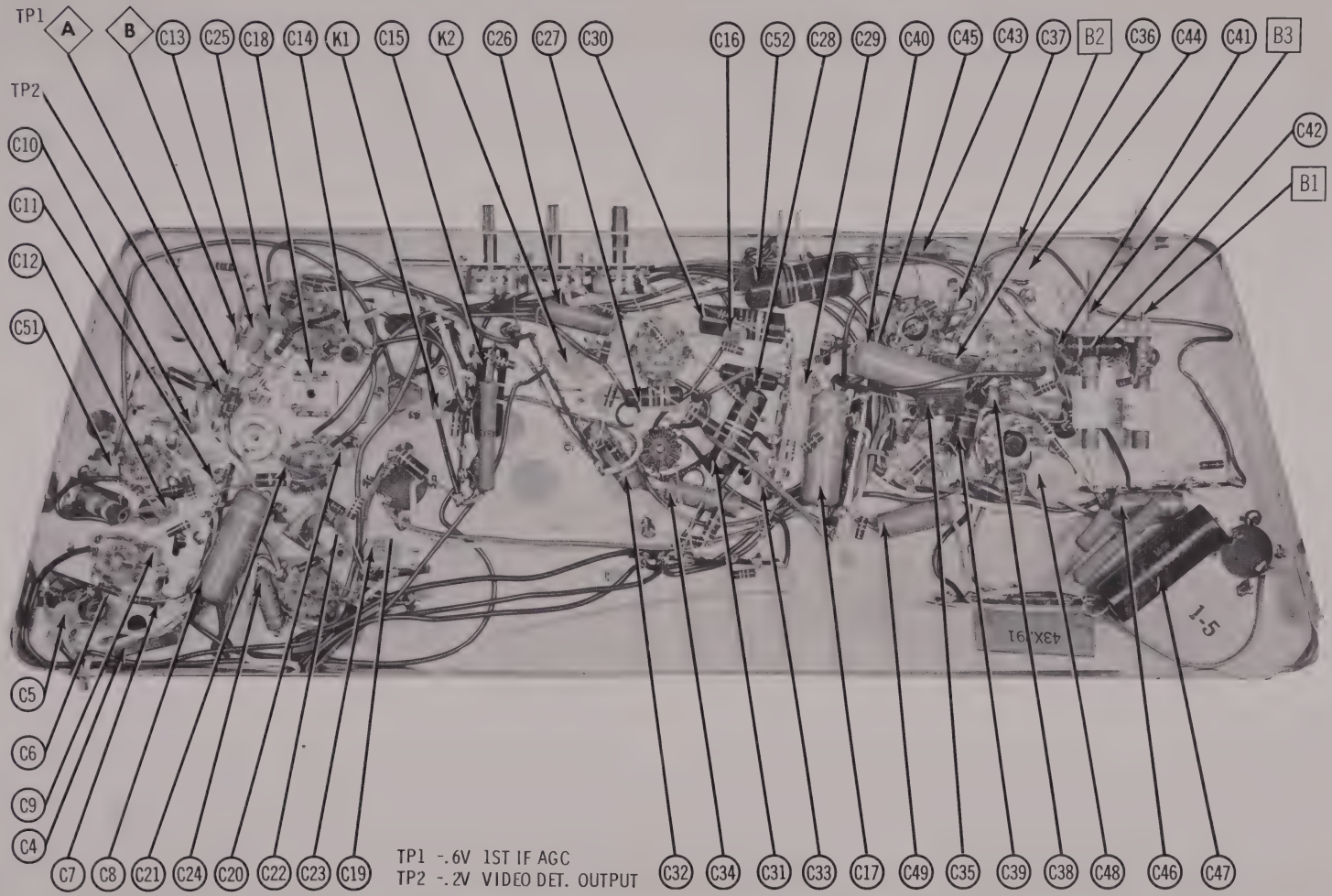
VHF TUNER with UHF Provisions - 25A1209



CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.



CHASSIS BOTTOM VIEW - CAPACITOR & MISC. IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	GENERAL ELECTRIC • RAYTHEON • SYLVANIA • USE	TYPE
V1	1st Video IF Amp.	3DE8
V2	2nd Video IF Amp.	3DX8
V3	Video Output - Sync Sep.	8EB8
V4	Audio Det.	3BN6
V5	Audio Output	8BQ6
V6	Sync Amp. - Vert. Mult.	6CG7

ITEM No.	USE	TYPE
V7	Vert. Mult. - Vert. Output	8EM5
V8	Horiz. AFC - Horiz. Osc.	6CG7
V9	Horiz. Output	12DQ6B
V10	Damper	17DE4
V11	5V Rectifier	1K3

PICTURE TUBE

ITEM No	REPLACEMENT DATA: AIRLINE PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
V12	19XP4		19XP4 ①		19XP4 ②	① Aluminized ② Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP	VOLT	AIRLINE PART No.	REPLACEMENT DATA: AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	140	150	45X42	AFS2E-33	XAD2E1	FFL7	TMS-1270	TVL-1428	
C2A	≡25	300	45X475	AFS2S-99-80	D0S3D	FP330.75	TMQ-4277	TVL-3574.5	
B	≡30	300							
C	≡100	50							
C3A	≡25	300	45X467	AFS3-99-82	D0D4E	FP330.27	TMT-3310	TVL-3574.6	
B	≡50	300							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING:			REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.047	200V			P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C5	68	NPO		† (56)	NPO-DI 68	DT2-68	C20Q68C	CCD-680	CNO-468	10TCC-Q68
C6	270		10%		DI-270	DD-370	L10T27	CCD-271	GP327	10TS-T27
C7	1000				BPD-001	DD-102	BYA10A	CCD-102	B-210	5HK-D10
C8	.47	200V			P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C9	330		10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C10	470		10%		DI-470	DD-471	L10T47	CCD-471	GP347	10TS-T47
C11	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C12	1000		10%		DI-1000	DD-102	5RS1D	CCD-102	GP210	5HK-D10
C13	.047	200V			P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C14	30	N33	10%	#47X869				*		
C15	.1	400V			P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C16	1000		10%		DI-1000	DD-102	5RS1D	CCD-102	GP210	10TS-D10
C17	.047	1000V			P1088N-047		CUB10S47	10DP-5-473	GEM-10147	10TM-S47
C18	3.3		10%		MPO-SE 3.3	TCZ-3R3	CYV33C	CCD-3R3	CNO-533	10TCC-V33
C19	680		10%		DI-680	DD-681	5HS7E6	CCD-681	GP368	10TS-T68
C20A	1000							CCD-102		
B	1000				BPD-2X001	DD3-102	BYD5DD1	CCD-102	B2X210	5HK-2D10
C21	5000				BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C22	15	N220	10%	#47X672				*		10TCR-Q15
C23	5000				BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C24	.0047	600V			P688N-0047	DE-472	CUB6P47	6DP-1-472	GEM-6247	6TM-D47
C25	5000				BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C26	.047	400V			P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C27	.0039	400V	10%		DPM8SD39		DPM8SD39	6DP-1-392	GEM-1524	6PS-D39
C28	.01	400V			P488N-01	D6-103	CUB4E	4DP-1-103	GEM-411	4TM-E10
C29	470		10%		DI-470	DD-471	5RS7A7	CCD-471	GP347	10TS-T47
C30	.047	600V	10%		V84C8847-10%		PM8S47	6DP-3-473	GEM-1815	6TM-S47
C31	.15	200V	10%		V84C2P15-10%		PM2P15	2DP-3-154	GEM-2015	2TM-P15
C32	.033	200V	10%		P288N-033	DD-203	CUB6S33	4DP-3-333	GEM-4133	4TM-S33
C33	1000		10%		DI-1000	DD-102	5RS1D	CCD-102	GP210	10TS-D10
C34	.01	600V			P688N-01	D6-103	CUB6E	6DP-1-103	GEM-611	6TM-E10
C35	18		10%		1469-000018	TCZ-18	22S5Q18	CM-19B-180K	CNO-418	MS-Q18
C36	82		10%		1469-000082	TCZ-82	22S5Q82	CM-19B-820K	CNO-482	MS-Q82
C37	100		10%		1465-0001	TCZ-100	22S5T1	CM-19B-101K	MCB235	MS-31
C38	.047	200V			P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C39	.022	200V			P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	2TM-S22
C40	.47	200V			P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C41	220		10%		1469-00022	TCZ-220	22S5T22	CM-19B-221K	CNO-322	MS-322
C42	.01	400V			P488N-01	D6-103	CUB4E	4DP-1-103	GEM-411	4TM-E10
C43	820		10%		1469-00082		5RS7S2	CM-19B-821K	MCB231	MS-382
C44	170-700			#17A276				469		
C45	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C46	.047	400V			P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C47	.22	600V			P688N-22		CUB6P22	6DP-5-224	GEM-6022	6TM-P22
C48	120	5000V	N1500 5%	#60X98-2						
C49	.033	600V			P688N-033	DD-303	CUB6S33	6DP-3-333	GEM-6133	6TM-S33
C50	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C51A	1000							CCD-102		
B	1000				BPD-2X001	DD3-103	BYD5DD1	CCD-102	B2X210	5HK-2D10
C52	.22	400V			P488N-22		CUB4P22	4DP-5-224	GEM-4022	4TM-P22

† Alternate Value. # Airline Part Number
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS - IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1000Ω		76X40	F1-S				Contrast
B	linear			R2-51	RTV-727	† QJ-1530	* UE4206-8	Volume
C	Switch			KR-1				Power Off-On

CONTROLS (cont)

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS - IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R2A	500K	½	40X496	B-59	A47-500K-S	Q11-133	U50	Brightness
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	1meg	½	40X497	B-69	A47-1meg-S	Q11-137	U54	Vert. Hold
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R4	7.5meg *		40X494					AGC
R5	2.5meg	½	40X466-1		TT-83	B47-2.5meg-S	HLC2	SU-565	Height
R6A	50K	½	40X467-2 ①		T2-31	B47-50K-S	B11-123	PTA54L	Vert. Linearity
B	Shaft				Not Req.	Not Req.	TM4	Not Req.	
R7	500Ω	2(WW)	40X472		WN-501	39-500	L13-500	PFL500	Buzz

† "CONCENTRIKIT" Equivalent: K-4 Kit with Base Elements and Shafts: B17-108, P10-110 (Panel) B11-137, R1-130 (Rear) T6-1 (Switch)

* "STA-LOC" Equivalent: FA13R, RU16L, UF13Z, IR937, US-41.
• Open at low (left hand end).
① Some versions use Pt. #40X492-1 (150K). R47, R48 not used with this application.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No	WORKMAN TV PART No.	REMARKS
R8	22meg			
R9	2.2meg			
R10	10K			
R11	470Ω			
R12	56Ω			
R13	22K			
R14	470Ω			
R15	150Ω			
R16	1meg			
R17	3900Ω			
R18	2.2meg			
R19	1meg			
R20	680Ω			Note 1
R21	68Ω			
R22	3600Ω 5W	PW5 3600Ω	5G 3600Ω	#43X331
R23	10K			
R24	180K			
R25	6.8meg			
R26	180K			
R27	22meg			Note 1
R28	100K			
R29	680Ω			
R30	330K			
R31	330Ω 1W			
R32	4700Ω 1W			
R33	100Ω			
R34	150Ω 1W			
R35	2.2meg			
R36	220K			
R37	1meg			
R38	47K			
R39	6800Ω 1W			
R40	3300Ω			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No	WORKMAN TV PART No.	REMARKS
R41	330K			
R42	470K			
R43	47K			
R44	39K			
R45	56K			
R46	56K			
R47	68K			Note 2
R48	22K			
R49	330K			
R50	470Ω 1W			
R51	220Ω			
R52	220Ω			
R53	3.4Ω (Cold)			
R54	220K			
R55	330K			
R56	820K			
R57	330K			
R58	82K			
R59	3900Ω			
R60	82K			
R61	22K			
R62	10K			
R63	1meg			
R64	56K			
R65	68Ω			
R66	1meg			
R67	22K 2W			
R68	33K 5W	PW5 33K	5G 33K	#43X356
R69	2500Ω 15W		RT 20W SQ 2500Ω	#43X291
R70	7.5Ω 15W †	FR 7.5		#43X397
R71	45Ω 30W			#43X403
R72	3600Ω			
R73	22meg			* (10meg)

Airline Part Number
Note 1. May not be used in some versions.
Note 2. Not used when 150K Vert. Lin. Control is used.

† Fusible Type.
• Alternate Value.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	AIRLINE PART No.	REPLACEMENT DATA
K1	Sync Sep. Grid	150mmf, 270K	76X15	
K2	Vert. Integrator	2000mmf, 100K, 100K	76X19	
K3	Isolation	470mmf, .3-1meg	76X18	Centralab RC-47 Sprague ACI-1

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1A	1st Video IF	9A3436	TV-156				①Includes Complete Assy.
B	41.25MC Trap						②Wound on 22K Resistor.
L2	2nd Video IF	9A3444					③Wound on 220Ω Resistor.
L3A	3rd Video IF	9A3483 ①					④Wound on 6800Ω Resistor.
B	RF Choke						* Parallel with 22K Res.
L4	RF Choke (7.5uh)	9A2432	BC-565	4611	RTC-8521	T859	▲ Parallel with 220Ω Res.
L5	Peaking (290uh)	36A23 ②	TV-189 *	6155 *	RTC-8527 *	T318 *	† Parallel with 6800Ω Res.
L6	Peaking (110uh)	36A19 ③	TV-182 ▲	6153 ▲	RTC-8585 ▲	T307 ▲	
L7	4.5MC Trap	9A2356	TV-151	1469	RTC-8503	T349	
L8	Peaking (350uh)	36A28 ④	TV-190 †	6152 †	RTC-8577 †	T319 †	
L9	Sound Takeoff	9A2434	TV-154	1470-A	RTC-8604	T247	
L10	Quadrature	9A2367	TV-121	1480	RTC-8605	T251	
L11	RF Choke (1.5uh)	9A2380	BC-562	4604	RTC-8516	T856	

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	Merit PART No.	Miller PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	Workman TV PART No.
L23	Horiz. Osc.	9A3481							
L23	Horiz. Waveform	9A3373	MWC-12	6315	QRC104	RTC-8638	ES-8	WLC-3	TU10

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 (%)	REPLACEMENT DATA: AIRLINE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L24	.260A	40Ω	1 Hy.	52X104-3	C-3996 ①	C-2343 ①	26C64	C-28X	① Drill new mounting hole(s).

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	Merit PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	Vert. Output	51X223-2						
T2	Yoke (Horiz. 19.6MC) 114° (Vert. 12MH)	9A-3477-A ①		PCM-2017 ②③④	DY-27A ②③④	Y-52 ②	Y-80-1 ⑤	
	Alt. Yoke	9A-3477 ①						
	Yoke Clamp	30X828						
T3	Horiz. Output	53X390						

① Includes rear cover, centering device and vert. damping resistor.
② Connect same as original.
③ Use original yoke damping network if necessary.
④ Requires new rear cover and centering device.
⑤ Remove 470Ω resistor across vert. windings, Connect same as original.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: AIRLINE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T4	6000Ω	3-4Ω	51X306A *	A-3026	A-3877①	24S48	S-48X	① Drill new mounting hole(s). * Alternate Pt. #51X306.

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: AIRLINE PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	12A580	4A07	

POWER RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: AIRLINE PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.260A	66X23	1N1763	40H	SR500	Silicon
M2	.260A	66X23	1N1763	40H	SR500	Silicon

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: AIRLINE PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M3	1N60 or CK706A			1N60 1N60	1N60 1N60	Video Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M4	Tuner	25A1309	VHF with UHF Provisions, STANDARD COIL REPLACEMENT #GGB-422B A
M5	Tuner	25A1307	UHF
	Switch	2A523	UHF Input
M3	Antenna	9A3479	JFD REPLACEMENT #TA409

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	26A704	Includes Gasket Assembly
Mask	26A710	
Escutcheon	4X326-11	UHF
Knob	10A018-2	Horiz. Hold
Knob	10A018-4	Rear Control
Knob	10A014-2	Contrast
Knob	10A015-4	Volume
Knob	10A026-1	Channel Selector
Knob	10A024-2	Fine Tuning
Knob	10A016-3	UHF Tuning
Knob	10A017-2	UHF Indicator
Cabinet	34X621-6	
Cabinet Back	14X592-2	

WIRING DATA

High Voltage Lead	Use BELDEN No. 8386
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8235
300Ω Antenna Lead-In	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8486 (Round) - 6 Conductor

AIRLINE MODELS WG-4225A, WG-4325A

FOLDER 2

TUNER PARTS LIST AND DESCRIPTIONS

25A1209

TUBES

◆ GENERAL ELECTRIC ◆			RAYTHEON ◆ SYLVANIA ◆		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amplifier	2CY5	V202	Mixer - Osc.	5CG8

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C202	5.6 10%							10TCC-V56
C203	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	CNO-410
C204	1.0 10%		NPO-DI 1.0	TCZ-1			CNO-510	10TCC-V10
C205	1000		EF-001	MFT-1000		CCF-102	CT280A	
C206								
C207	100		EF-0001	MFT-100		CCF-102	CT280A	
C208	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C209								
C210	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C211	30							
C212	1000		EF-001	MFT-1000		CCF-102	CT280A	
C213	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C214	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C215	1000		EF-001	MFT-1000		CCF-102	CT280A	
C216	1000		EF-001	MFT-1000		CCF-102	CT280A	
C217	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C218	1000		EF-001	MFT-1000		CCF-102	CT280A	
C219	1000		EF-001	MFT-1000		CCF-102	CT280A	

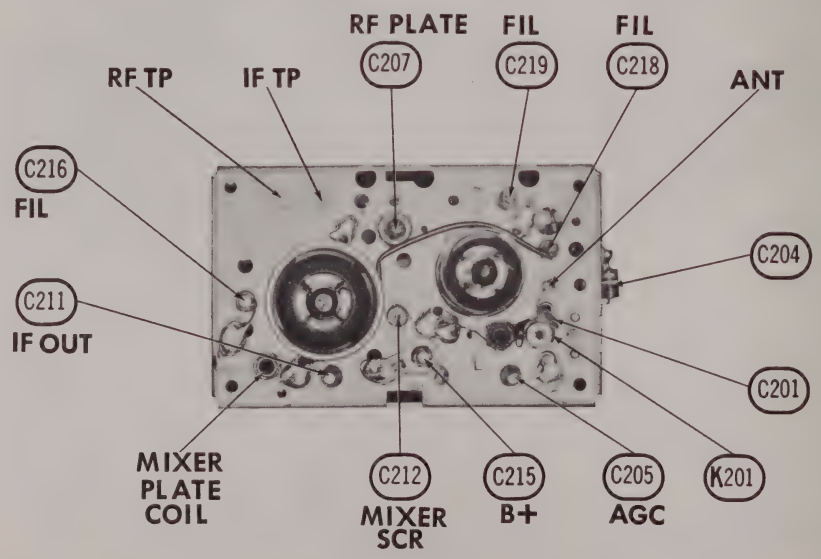
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

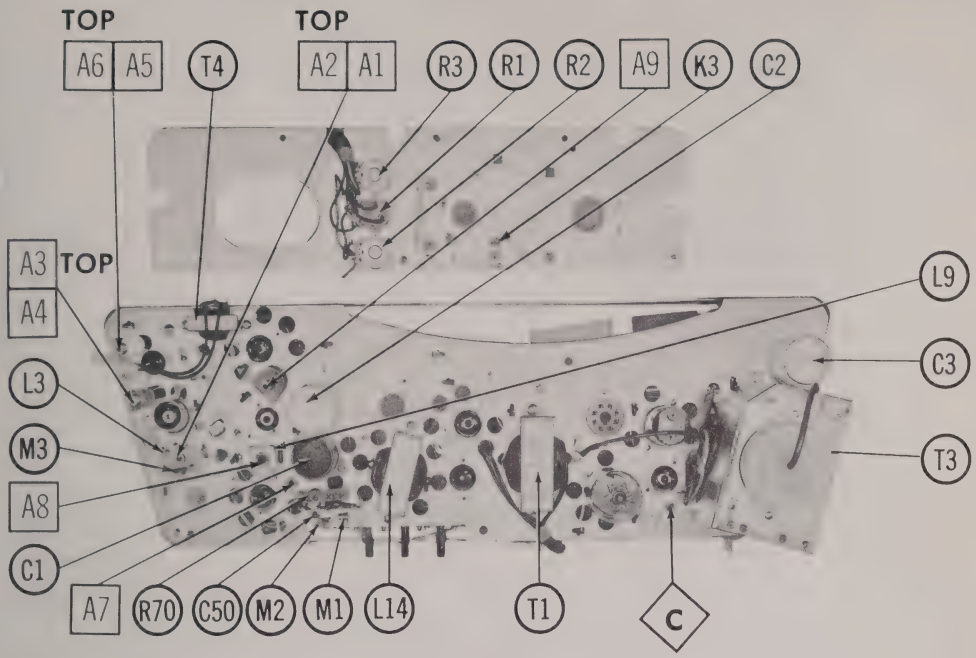
ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R201	10K				R206	2200Ω			
R202	10K				R207	10K			
R203	22K				R208	10K			
R204	22K				R209	15K			
R205	220K				R210	47K			

COMPONENT COMBINATIONS

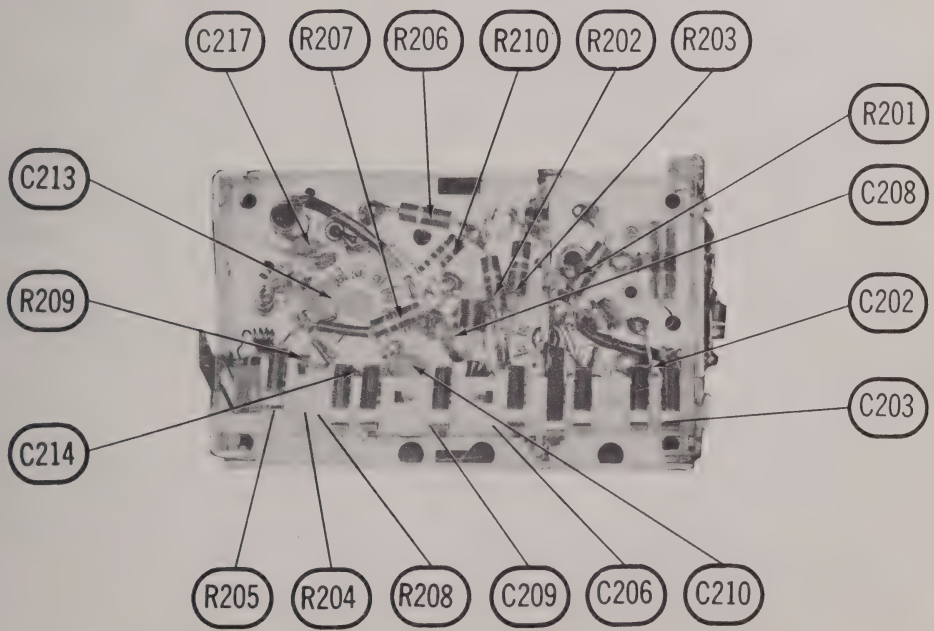
ITEM No.	USE	DESCRIPTION	PART No.	REPLACEMENT DATA
K201	Antenna Filter			



VHF TUNER WITH UHF PROVISIONS 25A1209 —TOP VIEW



CHASSIS - TOP VIEW



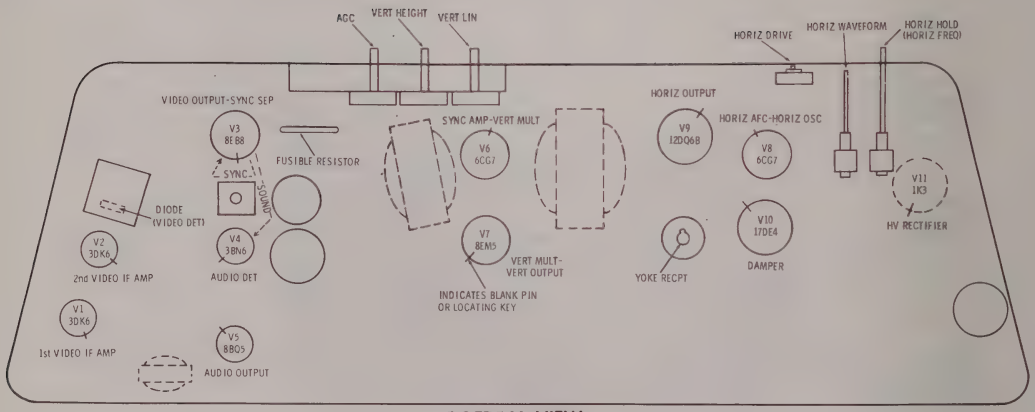
VHF TUNER with UHF Provisions 25A1209 - BOTTOM VIEW

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3DK6	1meg	56Ω	23Ω	22Ω	†3000Ω	†3000Ω	0Ω		
V2	3DK6	.1Ω	150Ω	22Ω	21Ω	†3000Ω	†3000Ω	0Ω		
V3	8EB8	0Ω	2.2meg	†220K	35Ω	28Ω	•200Ω	800K	†2500Ω	†3600Ω
V4	3BN6	•400Ω	5.5Ω	21Ω	20Ω	†7200Ω	5.5Ω	†330K		
V5	8BQ5	NC	•100Ω	150Ω	28Ω	23Ω	NC	†750Ω	NC	†370Ω
V6	6CG7	•ǂ1.1meg	•600K	0Ω	37Ω	35Ω	†12K	47K	0Ω	0Ω
V7	8EM5	†40Ω	NC	330K	37Ω	45Ω	NC	470Ω	NC	†455Ω
V8	6CG7	†56K	410K	0Ω	10Ω	12Ω	†40Ω	1.5meg	410K	0Ω
V9	12DQ6B	TP	20Ω	TP	†22K	1meg	TP	14Ω	0Ω	TOP CAP ǂ16Ω
V10	17DE4	TP	NC	†33K	NC	†40Ω	TP	3Ω	10Ω	
V11	1K3	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ǂ315Ω
V12	19XP4	12Ω	180K	ǂ10meg	†100K	NC	NC	•300K	14Ω	
V201	2CY5	•1.5meg	0Ω	3Ω	2Ω	†2500Ω	†12K	0Ω		
V202	5CG8	15K	†12K	0Ω	0Ω	2Ω	†5000Ω	†20K	0Ω	240K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

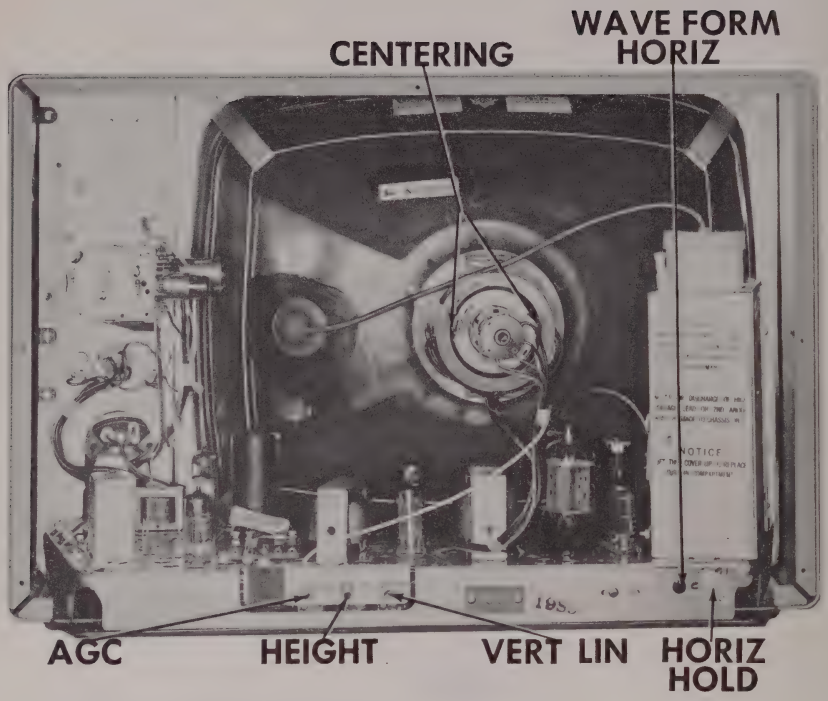
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM OUTPUT OF M1.
ǂ MEASURED FROM PIN 3 OF V10.

NC NO CONNECTION.
TP TIE POINT



BOTTOM VIEW

TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Suggested Alignment Tools:

B1 ..... 1/4" Nut Driver

B2 ..... GENERAL CEMENT #8271, 8279
WALSCO #2524, 2527

Tune in a station and adjust the Horizontal Hold until the picture is just about to tear out of sync as can be seen at the top of the picture.

Turn the Contrast fully counterclockwise and the Brightness clockwise so that the picture appears washed out. Turn the Horizontal Drive trimmer (B1) clockwise until white vertical bars (drive lines) appear in the left center portion of the raster, then counterclockwise until the white bars just disappear.

Connect the vertical amplifier of a scope to point Ⓒ. Low side to chassis. Adjust the Horizontal Waveform slug (B2) until the round and sharp peaks of the waveform are equal in amplitude. See Fig. 4. Keep the picture in sync during this adjustment.

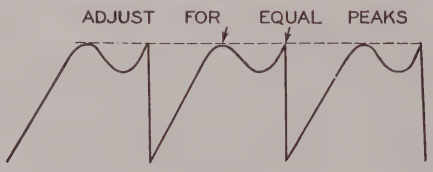


FIG. 4

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 8 metal screws holding rear cover.
2. Remove rear cover.
3. Remove 6 push-on type knobs (7 if UHF equipped) in front.
4. Remove picture tube socket, yoke plug, speaker leads, and high voltage lead.
5. Remove 5 screws holding control panel.
6. Remove 4 chassis bolts.
7. Remove chassis.

PICTURE TUBE REMOVAL

It is necessary to remove the chassis for picture tube removal.

PHOTOFACT® Folder

**PRODUCTION CHANGE
BULLETIN 264**

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 2 IN SET 511

Philco Models J3702A, F, L, J3704GL, PL, J3706BL, UJ3702A, F, L, UJ3704GL, PL, UJ3706BL (Ch. 11N51, U) were covered in PHOTOFACT Folder 2 - Set 511.

The following Models are electrically similar except for the changes mentioned below.

Model	Chassis	Tuner	Picture Tube
J3700C	11N51	76-12000-4	19ABP4
J3702AQ, G	11N51	76-12000-4	19ABP4
J3712GLR, PR	11N52	76-12124-4	19ABP4
J4323E, L, M	11N51A	76-12000-4	23CP4
J4324E, L, M, W	11N51A	76-12000-4	23CP4
J4804M, P, W	11N51A	76-12000-4	23CP4
J4805M, P, W	11N51A	76-12000-4	23CP4
J4806M	11N51A	76-12000-4	23CP4
J4808W	11N51A	76-12000-4	23CP4
J4810P	11N51A	76-12000-4	23CP4
J4811L, M, W	11N51A	76-12000-4	23CP4
J4812L, M, W	11N51A	76-12000-4	23CP4
J4813C, M	11N51A	76-12000-4	23CP4
J4814SL, SM	11N51A	76-12000-4	23CP4
J4815P	11N51A	76-12000-4	23CP4
J4817S	11N51A	76-12000-4	23CP4
J4820W	11N51A	76-12000-4	23CP4
J4821C, M, W	11N51A	76-12000-4	23CP4
J4822L, M, W	11N51A	76-12000-4	23CP4
J4830W	11N52A	76-12124-4	23CP4
J4836M, P, WP	11N51A	76-12000-4	23CP4
UJ3700C	11N51U	76-12073-5	19ABP4
UJ3702AQ, G	11N51U	76-12073-5	19ABP4
UJ3712GLR, PR	11N52U	76-12124-4	19ABP4
UJ4323E, L, M	11N51AU	76-12073-8	23CP4
UJ4324E, L, M, W	11N51AU	76-12073-8	23CP4
UJ4804M, P, W	11N51AU	76-12073-8	23CP4
UJ4805M, P, W	11N51AU	76-12073-8	23CP4
UJ4806M	11N51AU	76-12073-8	23CP4
UJ4808W	11N51AU	76-12073-8	23CP4
UJ4810P	11N51AU	76-12073-8	23CP4
UJ4811L, M, W	11N51AU	76-12073-8	23CP4
UJ4812L, M, W	11N51AU	76-12073-8	23CP4
UJ4813C, M	11N51AU	76-12073-8	23CP4
UJ4814SL, SM	11N51AU	76-12073-8	23CP4
UJ4815P	11N51AU	76-12073-8	23CP4
UJ4817S	11N51U	76-12073-8	23CP4
UJ4820W	11N51AU	76-12073-8	23CP4
UJ4821C, M, W	11N51AU	76-12073-8	23CP4
UJ4822L, M, W	11N51AU	76-12073-8	23CP4
UJ4830W	11N51AU	76-12073-8	23CP4
UJ4836WP	11N51AU	76-12073-8	23CP4

Ch. 11N51A

COMPONENT CHANGES

V14 (Picture Tube) is changed to a Type 23CP4.

T3 (Yoke) is changed to Part #32-9731-7.

C55 is decreased from 160mmf to 82mmf.

COMPONENTS ADDED

A 100K Resistor (Part #66-4108550) is added in series with the orange lead going to the picture tube focus anode.

A 100K Resistor (Part #66-4108550) is added in series with the red lead going to the picture tube screen grid.

PHILCO MODELS UJ&J3700C, UJ&J3702AQ, G, UJ&J3712GLR, PR, UJ&J4323E, L, M, UJ&J4324E, L, M, W, UJ&J4804M, P, W, UJ&J4805M, P, W, UJ&J4806M, UJ&J4808W, UJ&J4810P, UJ&J4811L, M, W, UJ&J4812L, M, W, UJ&J4813C, M, UJ&J4814SL, SM, UJ&J4815P, UJ&J4817S, UJ&J4820W, UJ&J4821C, M, W, UJ&J4822L, M, W, UJ&J4830W, UJ&J4836M, P, WP (CHASSIS 11N51, A, AU, U, 11N52, A, U)

(Continued On The Reverse Side)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

EIA MEMBER

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PRODUCTION CHANGE
BULLETIN 264

PRODUCTION CHANGE
BULLETIN 264

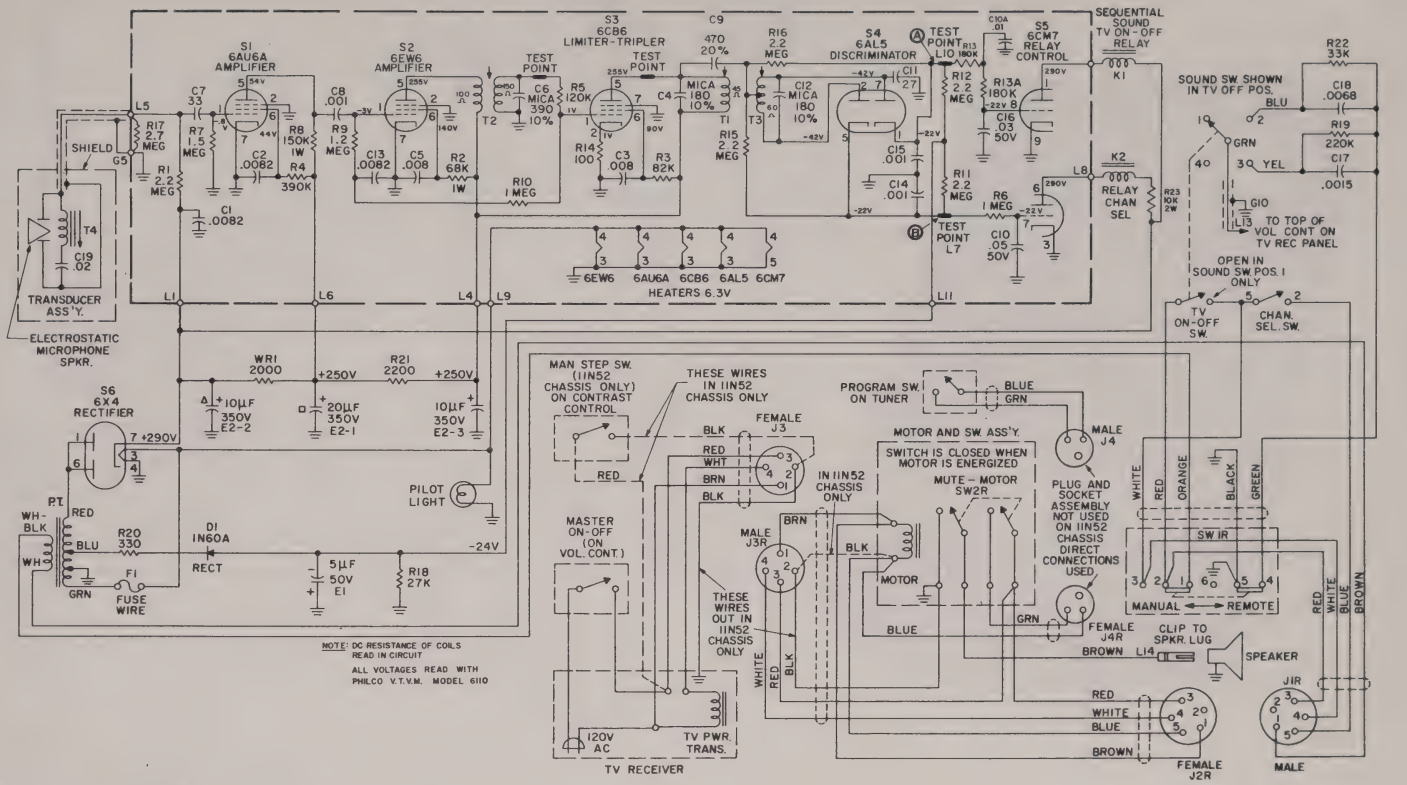
SET 540 FOLDER 3

	A 2200Ω Resistor (Part #66-2228550) is added in series with the green lead going to the picture tube.
Ch. 11N52	TUNER CHANGE The 11N52 Chassis is the same as the 11N51 Chassis with the exception that the tuner used is a Type T104C (Part #76-12124-4) and facilities for installation of the RC-55 remote control are included. A schematic diagram showing the remote control receiver RC-55 is given in this bulletin.

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	54-5918-1	Models J3700C, UJ3700C
Bezel	54-5849-23	Models J3712GLR, PR, UJ3712GLR, PR
Bezel	54-5849-13	Models J4323E, L, M, J4324E, L, M, W, J4804M, P, W, J4806M, W, J4810P, J4812L, M, W, UJ4323E, L, M, UJ4324E, L, M, W, UJ4804M, P, W, UJ4806M, W, UJ4810P, UJ4812L, M, W
Bezel	28-13744-1	Models J4805M, P, W, J4811L, M, W, J4813C, M, J4817S, J4821C, M, W, UJ4805M, P, W, UJ4811L, M, W, UJ4813C, M, UJ4817S, UJ4821C, M, W
Bezel	54-5849-16	Models J4814SL, SM, J4815P, J4820W, J4822L, M, W, UJ4814SL, SM, UJ4815P, UJ4820W, UJ4822L, M, W
Knob	424-8162	VHF Channel Selector, Models J3700C, J3702AQ, G, J4323E, L, M, J4324L, M, W, J4804M, P, W, J4806M, J4808W, J4810P, J4812L, M, W, UJ3700C, UJ3702AQ, G, UJ4323E, L, M, UJ4324L, M, W, UJ4804M, P, W, UJ4806M, UJ4808W, UJ4810P, UJ4812L, M, W
Knob	424-8170	VHF Channel Selector, Models J4805M, P, W, J4811L, M, W, J4813C, M, J4814SL, SM, J4815P, J4817S, J4820W, J4821C, M, W, J4822L, M, W, J4830W, J4836M, P, WP, UJ4815P, UJ4817S, UJ4820W, UJ4821C, M, W, UJ4822L, M, W, UJ4830W, UJ4836WP
Knob	424-8167	UHF Channel Selector, All UHF Models
Knob	424-8163	VHF Fine Tuning, Models J3700C , J3702AQ, G, J4323E, L, M, J4324E, L, M, W, J4804P, W, J4806M, J4808W, J4810P, J4812L, M, W, UJ3700C, UJ3702AQ, G, UJ4323E, L, M, UJ4324E, L, M, W, UJ4804P, W, UJ4806M, UJ4808W, UJ4810P, UJ4812L, M, W
Knob	424-8171	VHF Fine Tuning, Models J4805M, P, W, J4811L, M, W, J4813C, M, J4814SL, SM, J4815P, J4817S, J4820W, J4821C, M, W, J4822L, M, W, J4830W, J4836M, P, WP, UJ4805M, P, W, UJ4811L, M, W, UJ4813C, M, W, UJ4814SL, SM, UJ4815P, UJ4817S, UJ4820W, UJ4821C, M, W, UJ4822L, M, W, UJ4830W, UJ4836WP
Knob	424-8168	UHF Fine Tuning, All UHF Models
Knob	424-8201	Preset Fine Tuning, Models J3712GLR, UJ3712GLR
Knob	424-8200	Preset Fine Tuning, Models J3712PR, UJ3712PR
Knob	424-8165	Off-On Volume, All Models
Knob	424-8164	Brightness, Contrast, Horizontal Hold, Vertical Hold, Models J3700C, UJ3700C
Knob	424-8221	Brightness, Contrast, Horizontal Hold, Vertical Hold, Models J4323E, L, M, UJ4323E, L, M
Knob	424-8169	Brightness, Contrast, Horizontal Hold, Vertical Hold, All Models except J3700C, J4323E, L, M, UJ3700C, UJ4323E, L, M
Knob	424-8202	Fail Safe, Models J3712GLR, PR, UJ3712GLR, PR



PHILCO MODEL RC-55

Schematic Diagram Courtesy of Philco Corporation

PHOTOFACT® Folder with CIRCUITRACE®

ADMIRAL MODELS Y2081, Y2082, Y2083, Y2101, Y2102, Y2108 (Ch. 7B2, 7B2B)

ADMIRAL MODELS Y2081, Y2082, Y2083, Y2101, Y2102, Y2108 (Ch. 7B2, 7B2B)

MODEL Y2081

ADMIRAL MODELS Y2081, Y2082, Y2083, Y2101, Y2102, Y2108 (Ch. 7B2, 7B2B)

TRADE NAME	Admiral Models Y2081, Y2082, Y2083 (Ch. 7B2); Y2101, Y2102, Y2108 (Ch. 7B2B)
MANUFACTURER	Admiral Sales Corp., Service Div., 903 Morrissey Drive, P. O. Box 845, Bloomington, Illinois
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	6 Volts DC RATING 7MA @ 6 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	545 – 1620KC 25MA @ 6 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2, A3, A5.... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A4, A6..... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1620KC	"	"	A4	"
3.	"	535KC	Tuning gang fully closed.	"	A5	"
4.	"	1400KC	1400KC Signal.	"	A6	Adjust for maximum output. Repeat Steps 2, 3 and 4.

DISASSEMBLY

1. Remove rear cover by inserting coin in slot on bottom rear edge and twisting.
2. Remove knobs by pulling off.
3. Remove screw holding battery holder to speaker frame.
4. Remove 3 Phillips screws from rear center outside edges of printed board. (Do not remove the 4 Phillips screws near tuning shaft) A spacer is used with each mounting screw.
5. Remove chassis.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N411	Converter	2N411	2N486	2N411	PNP
X2	2N410	1st IF Amplifier	2N410	2N483	2N410	PNP
X3	2N410	2nd IF Amplifier	2N410	2N483	2N410	PNP
X4	2N406	AF Amplifier	2N406	2N633	2N406	PNP
X5	2N406	Driver	2N406	2N633	2N406	PNP
X6	2N406	Output	2N406	2N633	2N406	PNP } Matched
X7	2N406	Output	2N406	2N633	2N406	PNP } Pair

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	40	3	67B32-9	BCD3035	ECPB114	PET140	MLV40-3	VL-1045	
C2	60	6	67B32-8	BCD6075	ECPB116	PET1260	MLV50-6	VL-1097	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	.47 3V	#65B45-16		UK-474				HY-130
C4	10000 50V		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C5	50000 50V		C80V503AM	DDA-503	H-05S5		TA-150	TG-S50
C6	11 N750 5%		N750-DI 10	DTN-10	C10Q1U	CCTN-100	CN7-410	10TCU-Q10
C7	50000 50V		C80V503AM	DDA-503	H-05S5		TA-150	TG-S50
C8	50000 50V		C80V503AM	DDA-503	H-05S5		TA-150	TG-S50
C9	50000 50V		C80V503AM	DDA-503	H-05S5		TA-150	TG-S50
C10	5 N750 5%			DTN-5	C10V5U	CCTN-050	CN7-550	10TCU-V50
C11	50000 50V		C80V503AM	DDA-503	H-05S5		TA-150	TG-S50
C12	50000 50V		C80V503AM	DDA-503	H-05S5		TA-150	TG-S50
C13	1000000 3V	#65B45-15		UK-105				HY-135
C14	30000 50V	#65B45-8						
C15	5000 50V		C80V502AM	DM-502	H-05D5	CCD-502	TA-050	TG-250
C16	5000 50V		C80V502AM	DM-502	H-05D5	CCD-502	TA-050	TG-250

Admiral Part Number.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ADMIRAL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/4	75C69-2 ①					Volume & Switch

① Chassis 7B2B use Part #75B36-3.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	6800Ω				R12	18K			
R3	22K				R13	470Ω			
R4	3900Ω				R14	560Ω			
R5	56K				R15	3000Ω			
R6	43K				R16	39K			
R7	3300Ω				R17	18K			
R8	470Ω				R18	270Ω			
R9	1800Ω				R19	15K			
R10	18K				R20	220Ω			
R11	2700Ω				R21	100Ω			

(CONTINUED ON REAR PAGE)

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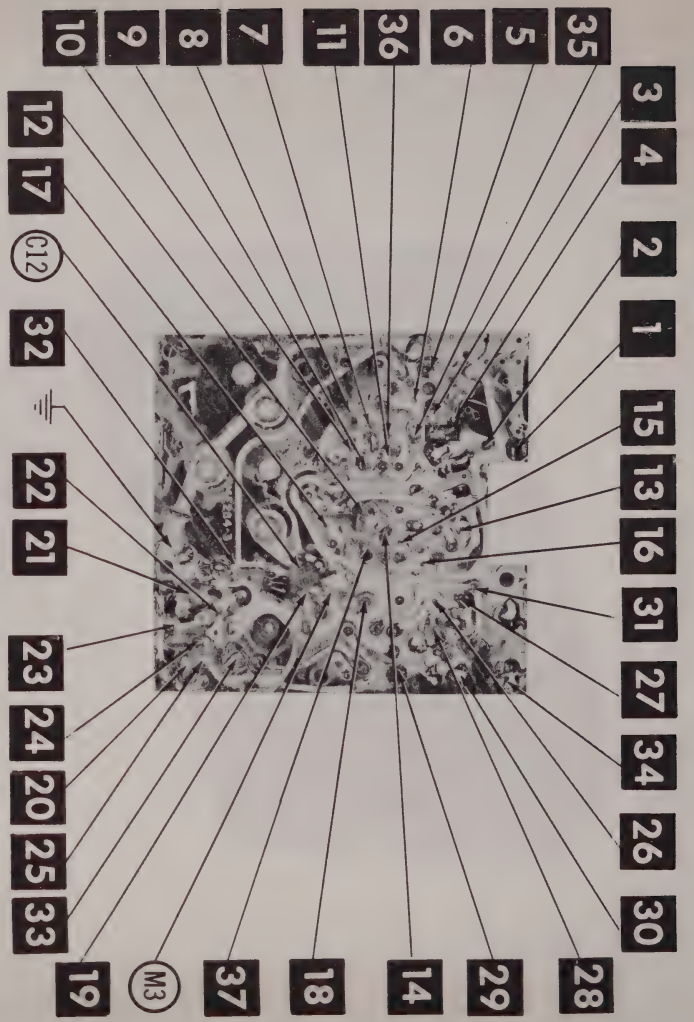
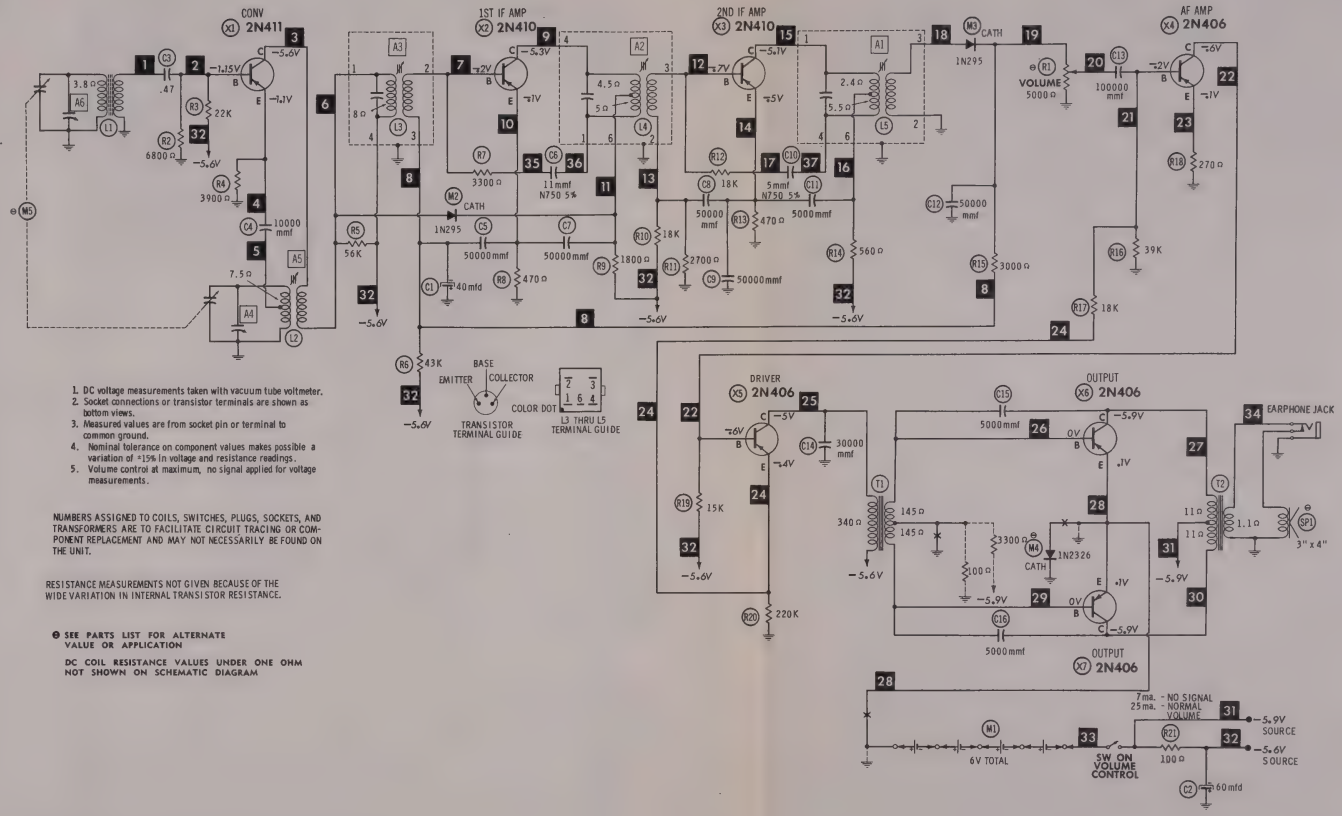
PRINTED BOARD





1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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ADMIRAL MODELS Y2081, Y2082, Y2083, Y2101, Y2102, Y2108 (Ch. 7B2, 7B2B)

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		ADMIRAL PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick	69B218-12					
L2	Osc.	69B246-2					
L3	1st IF	72C182-13					
L4	2nd IF	72C182-11					
L5	3rd IF	72C182-12					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	ADMIRAL PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1, 3	1	79B84-2					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	ADMIRAL PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	200Ω CT	10-12Ω	79B85-2			TR-15 ①		① Remove Frame

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ADMIRAL PART No.	QUAM PART No.	
SP1	3"x 4"	PM	10-12Ω	78C163-1 *		* Models Y2081, Y2082, Y2083
	4"	PM	10-12Ω	78B170-1 ♣		♣ Models Y2101, Y2102, Y2108

BATTERIES

ITEM No.	VOLTAGE	ADMIRAL PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V			930		1015		M-15R	4 Required, Chassis 7B2
	1.5V			130		635		M-14R	4 Required, Chassis 7B2B

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		ADMIRAL PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N295	57C1-2		1N295	1N295	Overload (Pigtail)
M3	1N295	57C1-2		1N295	1N295	Detector (Pigtail)
M4	1N2326	57C1-29				Output Bias (Chassis 7B2 only)

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M5	Tuning Cap.	68C82-1	2 Gang, Chassis 7B2
	Tuning Cap.	68C82-3	2 Gang, Chassis 7B2B

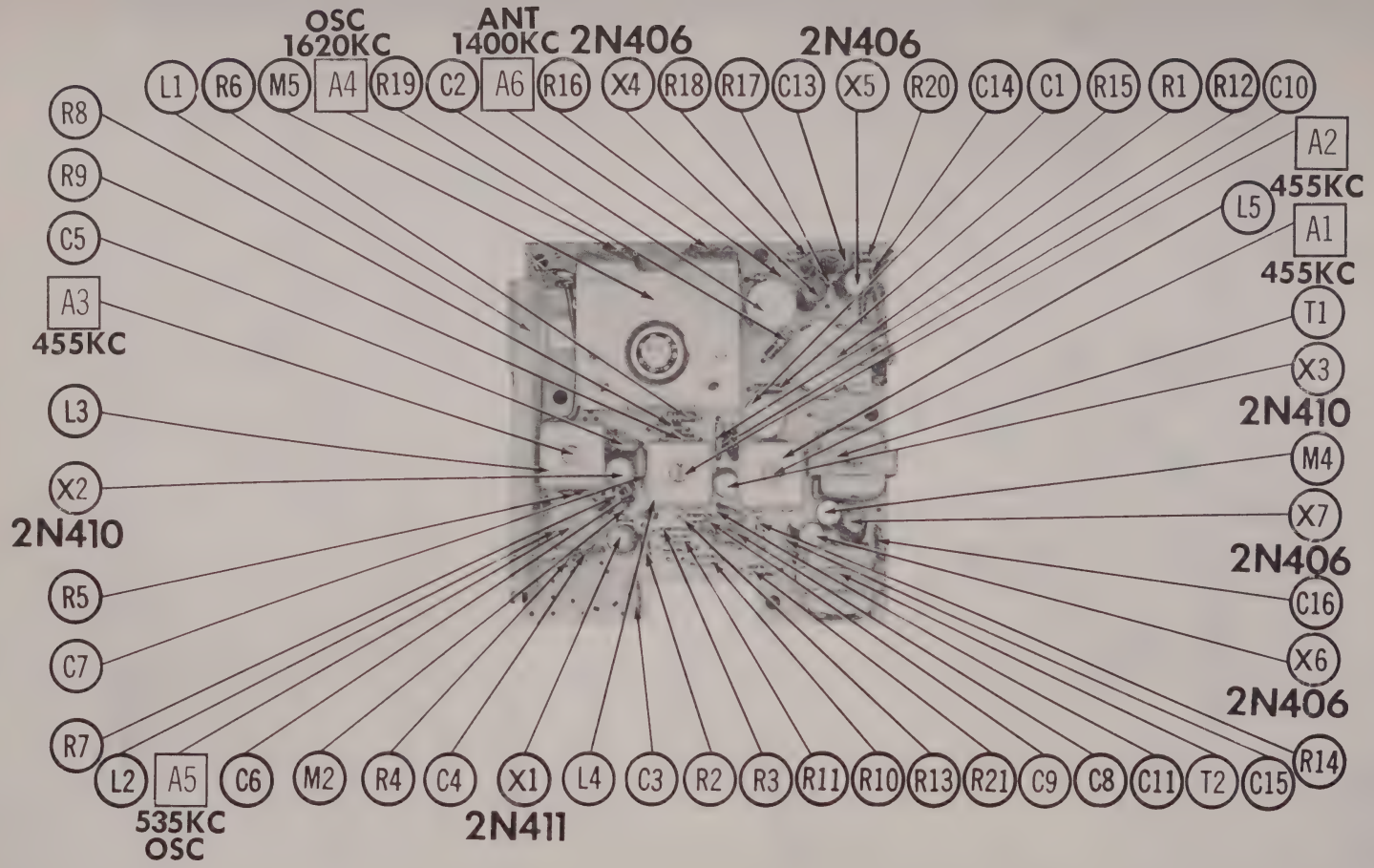
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial	21B35-1	Models Y2081, Y2082, Y2083
Dial	33C401-2	Models Y2101, Y2102, Y2108
Knob	33B392-4	Tuning, Models Y2081, Y2082, Y2083
Knob	33C401-1	Tuning, Models Y2101, Y2102, Y2108
Knob	33 B392-3	Volume, Models Y2081, Y2082, Y2083
Knob	33C401-1	Volume, Models Y2101, Y2102, Y2108
Handle	37B193-1	Brass, Models Y2081, Y2082, Y2083
Handle	33B406-1	Black, Model Y2101
Handle	33B406-2	Coral, Model Y2102
Handle	33B406-3	Green, Model Y2108
Cabinet Front	A7773	Black, Model Y2081
Cabinet Back	34E158-3	Black, Model Y2081
Cabinet Front	A7774	Coral, Model Y2082
Cabinet Back	34E158-15	Coral, Model Y2082
Cabinet Front	A7776	White, Model Y2083
Cabinet Back	34E158-7	White, Model Y2083
Cabinet Front	A7780	Black, Model Y2101
Cabinet Back	A7783	Black, Model Y2101
Cabinet Front	A7781	Coral, Model Y2102
Cabinet Back	A7784	Coral, Model Y2102
Cabinet Front	A7782	Green, Model Y2108
Cabinet Back	A7786	Green, Model Y2108

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors



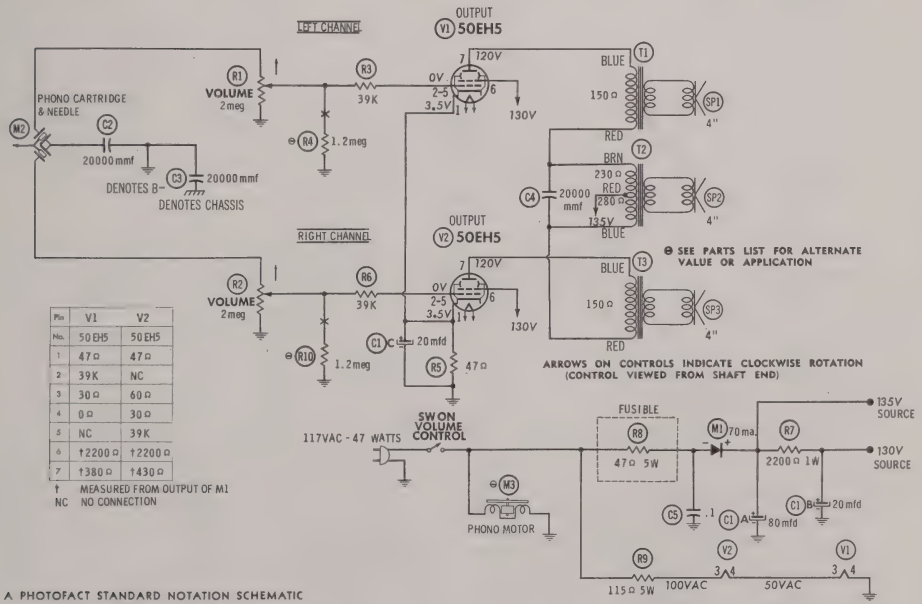
CHASSIS TOP VIEW

PHOTOFACT® Folder

AIRLINE
MODEL JWR-835A

AIRLINE
MODEL JWR-835A

TRADE NAME	Airline Model JWR-835A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago 7, Illinois
TYPE SET	AC Operated 2 Tube Stereo Phono Amplifier With 4 Speed Manual Record Player
POWER SUPPLY	105 — 125 Volts AC, 60 Cycles RATING 47 Watts, .5 Amp. @117 Volts AC



Pin	V1	V2
No.	50EH5	50EH5
1	47Ω	47Ω
2	39K	NC
3	30Ω	60Ω
4	0Ω	30Ω
5	NC	39K
6	†2200Ω	†2200Ω
7	†380Ω	†430Ω

† MEASURED FROM OUTPUT OF M1
NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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KR602

SET 540 FOLDER 5

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Left Channel Output	50EH5	V2	Right Channel Output	50EH5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	80	150	12145	PRS3800	BBRT84215	WQ230	TDLT-7	TVA-3455	
B	20	150							
C	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C3	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C4	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C5	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	2meg	½	13786				TA26A	Volume, Left Channel
R2A	2meg	½	13069				TA26A	Volume, Right Channel
B	Switch						US26T	Power Off-On

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	39K			
R4	1.2meg			Note 1
R5	47Ω			
R6	39K			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R7	2200Ω 1W			
R8	47Ω 5W	PW5-47	5W-SQ-47	
R9	115Ω 5W	PW5-115	5W-SQ-115	
R10	1.2meg			Note 1

Note 1. Not used in some versions.

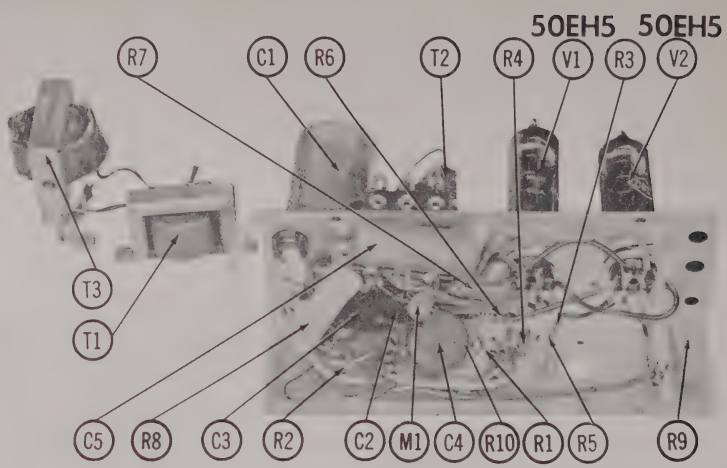
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA AIRLINE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	3100Ω	3-4Ω	13649	A-3025	A-3332	24S53	S-16X	① Drill New Mounting Hole(s)
T2	3100Ω	3-4Ω	13649	A-3025	A-3332	24S53	S-16X	
T3	3200Ω CT	3-4Ω	14483	A-2900①	A-3856①	24S04①	S-62X	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA AIRLINE PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	11792	4A07	
SP2	4"	PM	3-4Ω	11792	4A07	
SP3	4"	PM	3-4Ω	11792	4A07	

CHASSIS—BOTTOM VIEW



POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA AIRLINE PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.070A	13782	1N1763	2F4	SR200	

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA AIRLINE PART No. CARTRIDGE	AIRLINE PART No. NEEDLE*	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE*	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE*	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE*	NOTES
M2	60-82	Not Req.	74TS K-74-TS①	N8-7 *& N8-3 *	96T	Not Req.	T8-C1-12TH3	Not Req.	① Includes Tone Arm

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M3	Motor	13745-8	4 Speed (Alliance)
	Motor	13746-8	4 Speed (G.I.)
	Idler Wheel		WALSCO Part No. 1490-01

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder

AMC
MODEL D5C

AMC
MODEL D5C

AMC
MODEL D5C

TRADE NAME	AMC Model D5C
SUPPLIER	Associated Merchandising Corp., 1440 Broadway, New York 18, N. Y.
TYPE SET	AC Operated 5 Tube AM Receiver With Electric Clock
POWER SUPPLY	110 — 120 Volts AC, 60 Cycles RATING 25 Watts, .24 Amp. @117 Volts AC (Less Clock)
TUNING RANGE—BROADCAST	540 — 1600KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 thru A4....GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A6.....GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	1600KC	1600KC	"	A5	"
3.	Loop	1400KC	1400KC Signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KG591

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PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Converter	12BE6	V4	Output	50C5
V2	IF Amplifier	12BA6	V5	Rectifier	35W4
V3	Det.-AVC-AF Amp.	12AV6			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	AMC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	50	150		PRS2200	BBRD5315	TCD497	TDLD-8	TVA-2450	
B	30	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C3	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C4	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C5	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	AMC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	500K	½	E2521	B-60	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

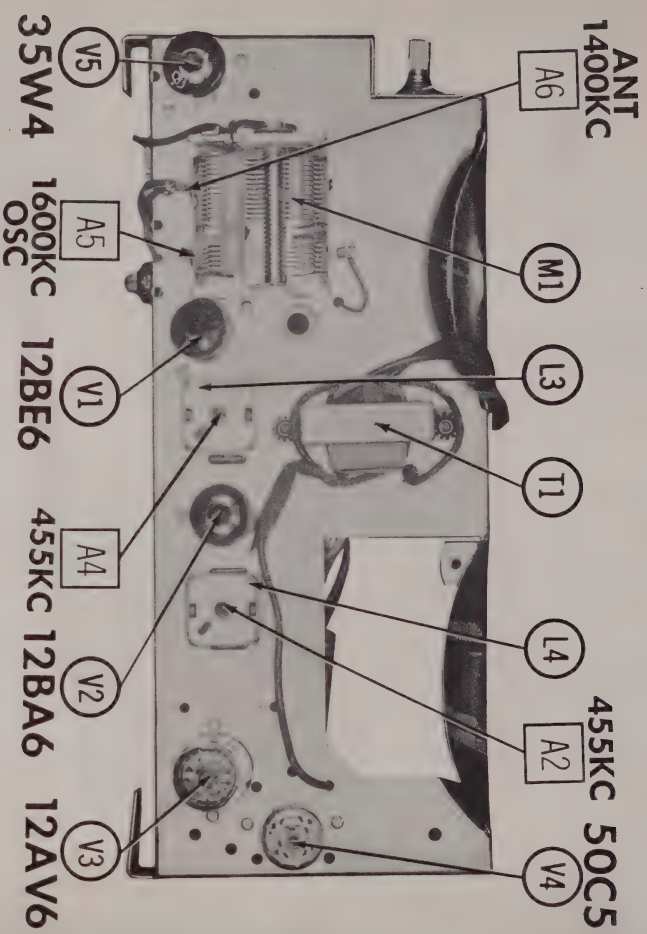
ITEM No.	RATING	REPLACEMENT DATA		REMARKS
		IRC PART No.	WORKMAN TV PART No.	
R2	22K			
R3	100Ω			
R4	3.3meg			

ITEM No.	RATING	REPLACEMENT DATA		REMARKS
		IRC PART No.	WORKMAN TV PART No.	
R5	150Ω			
R6	1500Ω 1W			

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	AMC PART No.	REPLACEMENT DATA
K1	Audio Coupling	220mmf, 250mmf, 2000mmf, 5000mmf, 470K, 470K, 6.8meg		Aerovox PA-113-1 Centralab PC-150 Mallory MS-106 Sprague DT-1

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		AMC PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1 L2 L3 L4	Loop Ant. Osc. Input IF Output IF		 BC-393 BC-352 BC-353	 69-OSC 12-C1 12-C2	 RTC-8646 RTC-8632 RTC-8633	 T504 T607 T608	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	AMC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3100Ω	3-4Ω	E1113	A-3025	A-3332	26S58	S-16X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AMC PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	E-1017-B	4A05	

MISCELLANEOUS

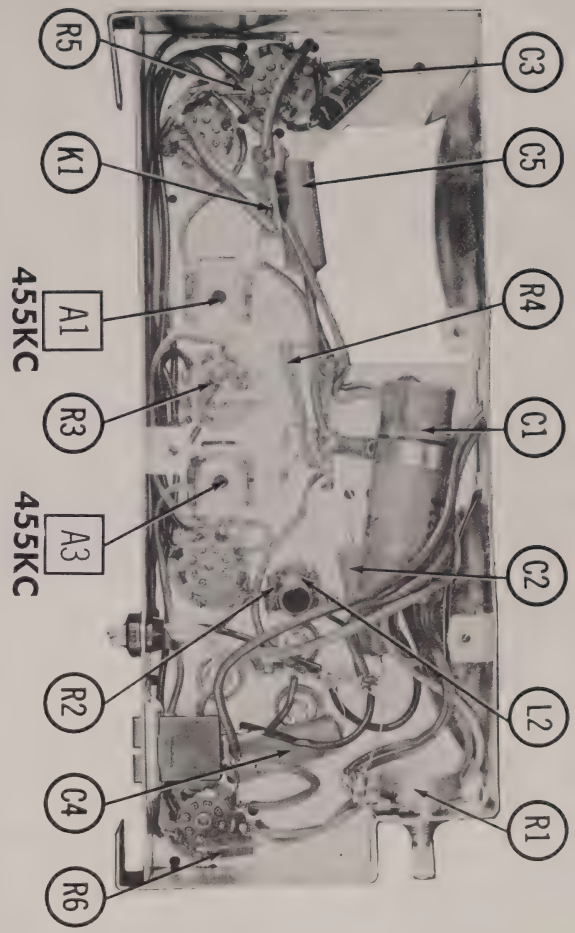
ITEM No.	PART NAME	AMC PART No.	NOTES
M1 M2	Tuning Cap. Clock Ass'y.		2 Gang (Ant. 30—390mmf, Osc. 20—125mmf)

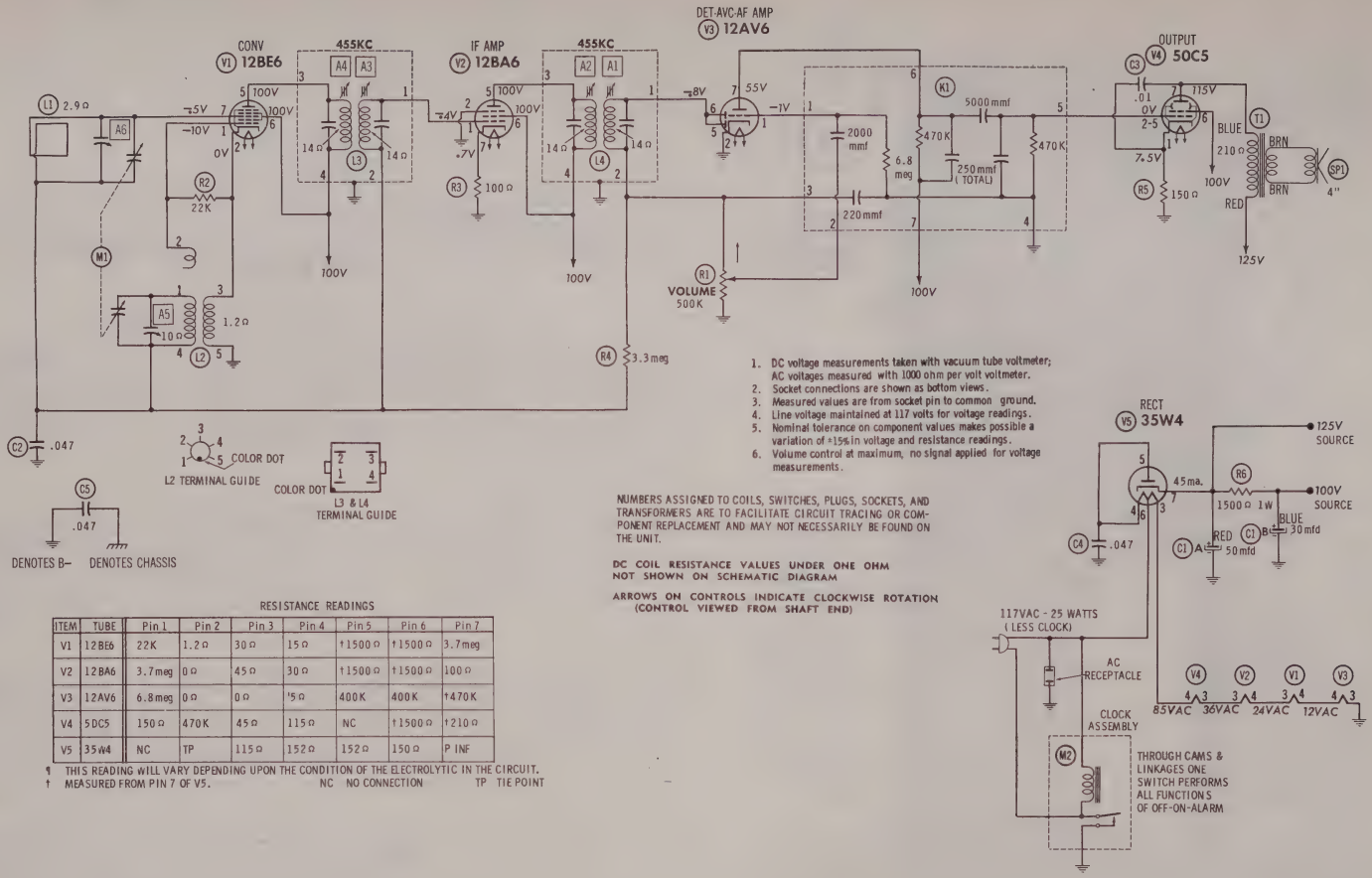
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS—BOTTOM VIEW





1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	1.2Ω	30Ω	15Ω	†1500Ω	†1500Ω	3.7meg
V2	12BA6	3.7meg	0Ω	45Ω	30Ω	†1500Ω	†1500Ω	100Ω
V3	12AV6	6.8meg	0Ω	0Ω	¶5Ω	400K	400K	†470K
V4	50C5	150Ω	470K	45Ω	115Ω	NC	†1500Ω	†210Ω
V5	35W4	NC	TP	115Ω	152Ω	152Ω	150Ω	P INF

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5. NC NO CONNECTION TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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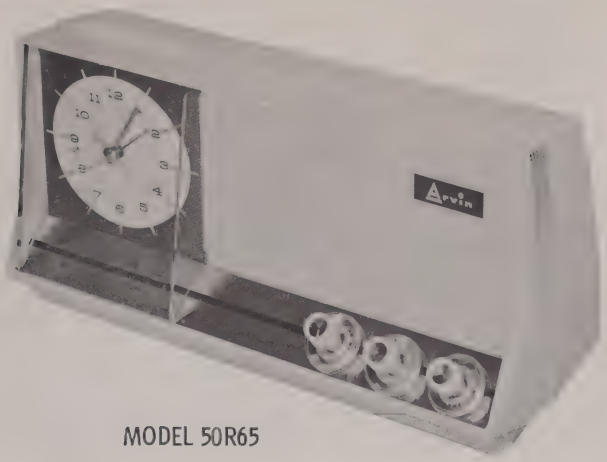
AMC
MODEL D5C

PHOTOFACT® Folder with CIRCUITRACE®

ARVIN MODELS
50R65, 50R67 (Ch. 1.47001)

ARVIN MODELS
50R65, 50R67 (Ch. 1.47001)



MODEL 50R65

TRADE NAME	Arvin Models 50R65, 50R67 (Ch. 1.47001)
MANUFACTURER	Arvin Industries, Inc., Columbus, Indiana
TYPE SET	AC Operated 5 Tube AM Receiver With Electric Clock
POWER SUPPLY	105 — 125 Volts AC, 60 Cycles RATING 24 Watts, .24 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	540 — 1670KC

ALIGNMENT INSTRUCTIONS

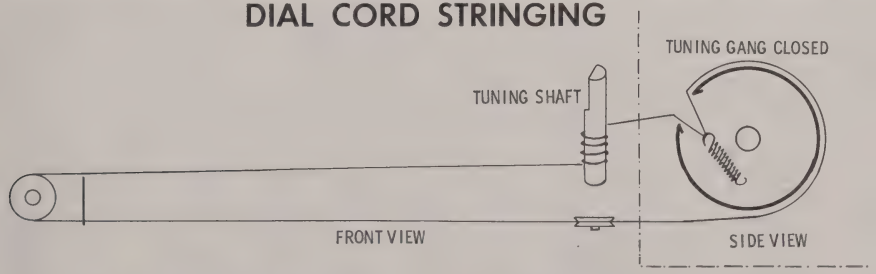
ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 thru A4, A6...GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A7.....GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .05mfd to pin 7 (grid) of Converter. Low side to chassis.	455KC (400% Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Loop	1670KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	600KC	600KC	"	A6	"
4.	"	1400KC	1400KC Signal.	"	A7	Adjust for maximum output. Repeat Steps 2, 3 and 4.

DIAL CORD STRINGING



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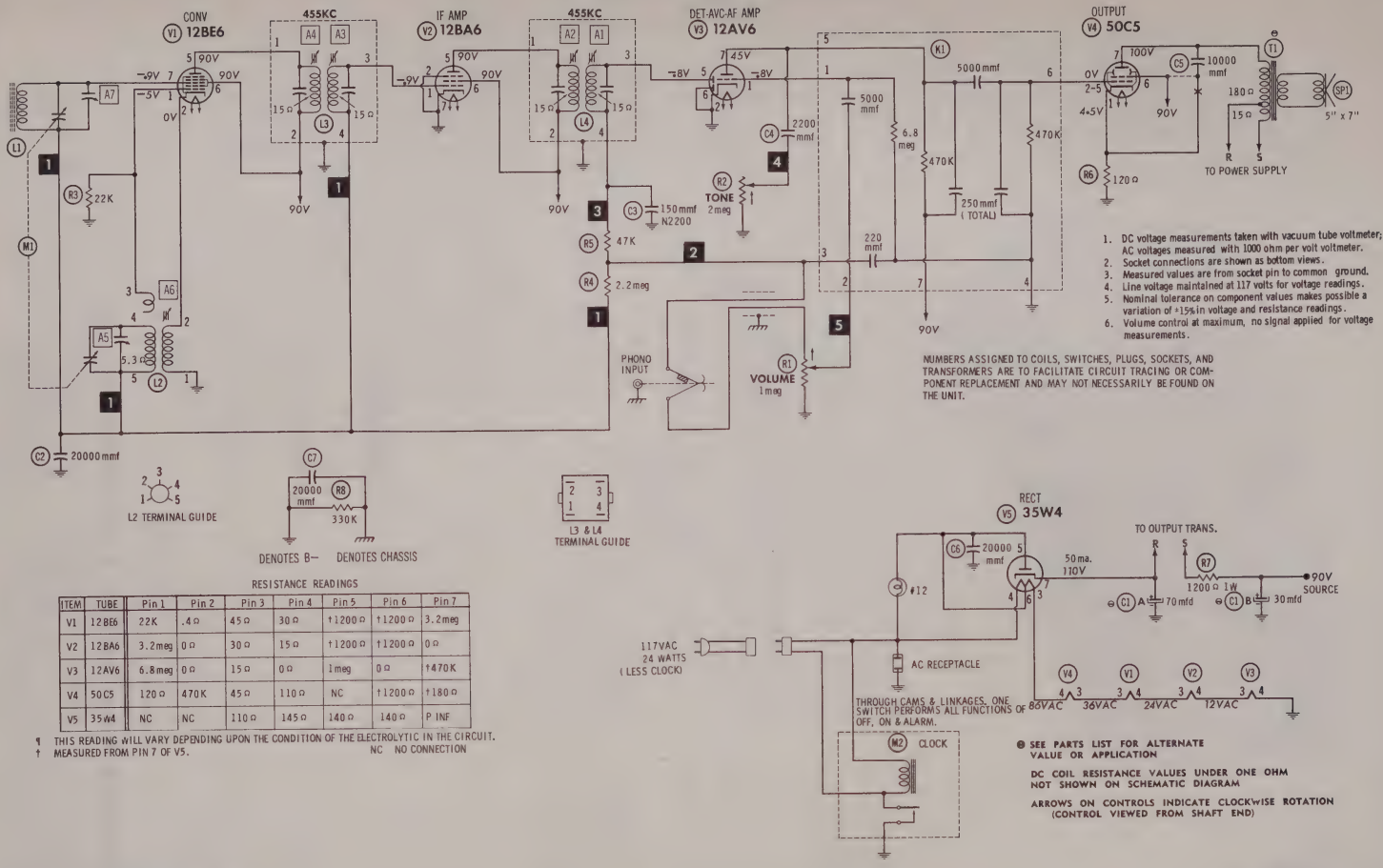
KG570

SET 540 FOLDER 7



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.4Ω	45Ω	30Ω	†1200Ω	†1200Ω	3.2meg
V2	12BA6	3.2meg	0Ω	30Ω	15Ω	†1200Ω	†1200Ω	0Ω
V3	12AV6	6.8meg	0Ω	15Ω	0Ω	1meg	0Ω	†470K
V4	50C5	120Ω	470K	45Ω	110Ω	NC	†1200Ω	†180Ω
V5	35W4	NC	NC	110Ω	145Ω	140Ω	140Ω	P INF

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5. NC NO CONNECTION

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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ARVIN MODELS
50R65, 50R67 (Ch. 1.47001)

PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Converter	12BE6	V4	Output	50C5
V2	IF Amplifier	12BA6	V5	Rectifier	35W4
V3	Det.-AVC-AF Amp.	12AV6			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ARVIN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	70	150	43711-12①	PWH2-17-50	B0150 †	PFP214.3	TMD-2125†	PCL-2441	
B	30	150							

① Alternate Part #43711-2
† Use Printed Circuit Adapters #55277 & 55278.
♣ Use Printed Circuit Adapter Kit TMA.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	20000		BPD-02	DD-203	BYB6S2	CCD-203 *	B-120	5HK-S20
C3	150 N2200							
C4	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C5	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C6	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C7	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ARVIN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	1meg	½	47500-8	B-70	A47-1meg-Z	Q13-137	U53	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	2meg	½	47500-7	B-76	A47-2meg-Z	Q13-139	U55	Tone
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	22K				R6	120Ω			
R4	2.2meg				R7	1200Ω 1W			
R5	47K				R8	330K			

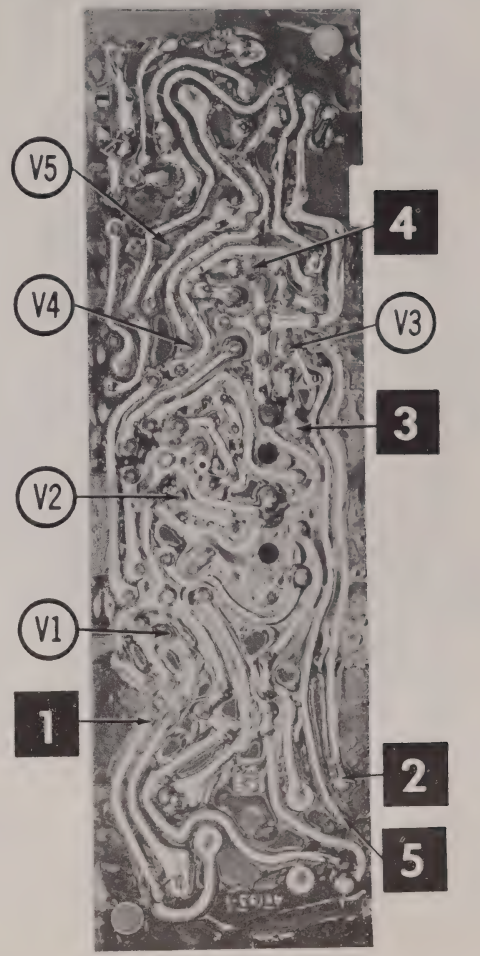
COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ARVIN PART No.	REPLACEMENT DATA	
K1	Audio Coupling	220mmf, 250mmf, 5000mmf, 5000mmf, 470K, 470K, 6.8meg	43743-2	Aerovox Centralab Sprague	PA-512-3 PC-158 DT-5

PRINTED BOARD

A Howard W. Sams CIRCUITRACE® Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		ARVIN PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick	46568-4	BC-419	2001		T532	
L2	Osc.	43644-1					
L3	Input IF	44282-1	BC-356	13-PC9	RTC-8683	T614	
L4	Output IF	44282-1	BC-357	13-PC10	RTC-8684	T615	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	ARVIN PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3500Ω Tap @ 8%	3-4Ω	46200-7 ①	A-3031②	A-3336②	24S89②	S-16X	① Alternate Part #42600-7 ② Drill New Mounting Hole(s).

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ARVIN PART No.	QUAM PART No.	
SP1	5"x 7"	PM	3-4Ω	46130-2	57A15	

MISCELLANEOUS

ITEM No.	PART NAME	ARVIN PART No.	NOTES
M1	Tuning Cap.	45533-1	2 Gang
M2	Timer	48177-61	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

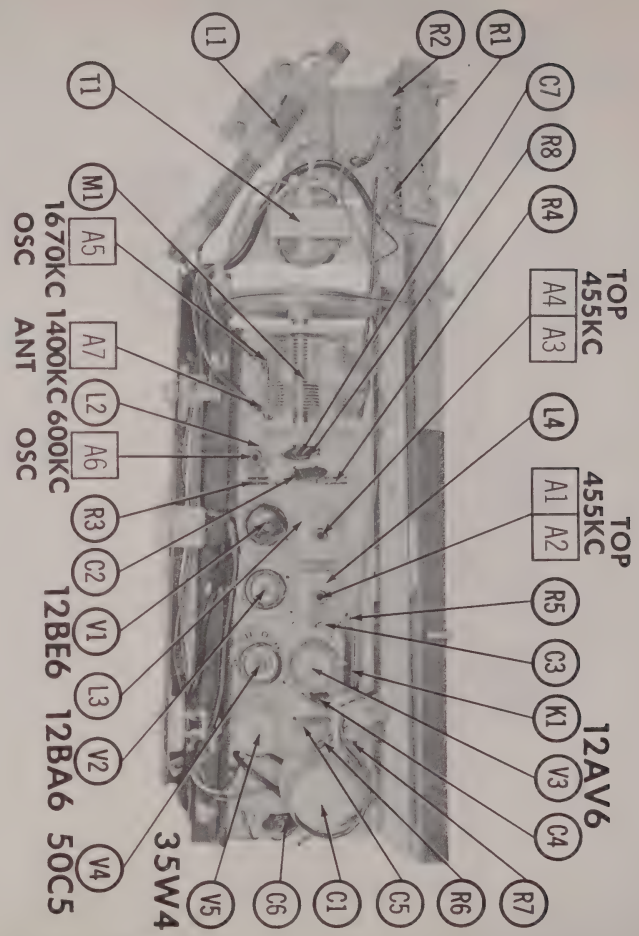
NAME	PART NO.	DESCRIPTION
Crystal	48148	Clock
Dial	48783	Crystal
Pointer	48192	Dial
Knob	48168	Tuning
Knob	48169	Volume
Knob	48170	Tone
Pushbutton	48152-67	
Cabinet	48145-125	Front, Blue
Cabinet	48145-67	Front, White
Cabinet	48149-125	Back, Blue
Cabinet	48149-67	Back, White

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

CHASSIS—TOP VIEW



PHOTOFACT® Folder

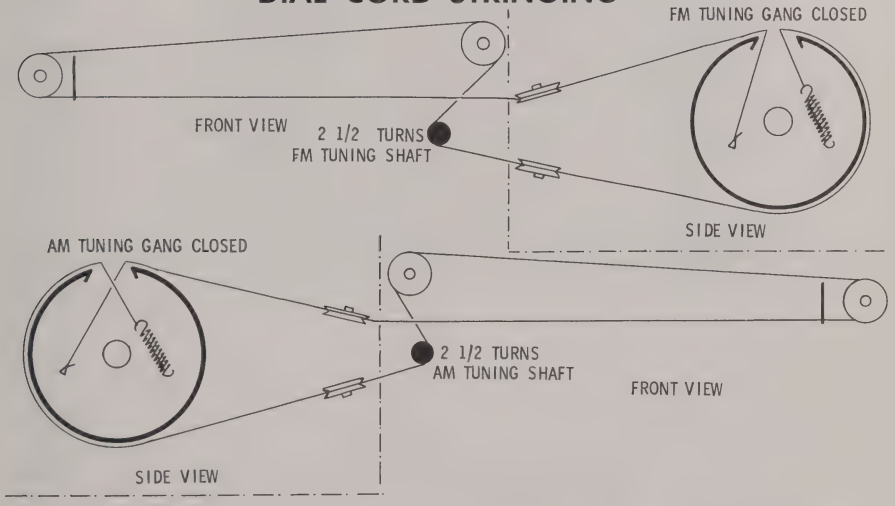
**BELL SOUND
MODEL 2425**

BELL SOUND
MODEL 2425

BELL SOUND
MODEL 2425

TRADE NAME	Bell Sound Model 2425		
MANUFACTURER	Bell Sound Div., Thompson Ramo Wooldridge Inc., 555 Marion Road, Columbus 7, Ohio		
TYPE SET	AC Operated 18 Tube FM-AM Receiver With Stereo Amplifier		
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles	RATING	125 Watts, 1.15 Amp. @117 Volts AC
TUNING RANGE	540 – 1600KC	FREQ. MOD.	88 – 108MC

DIAL CORD STRINGING



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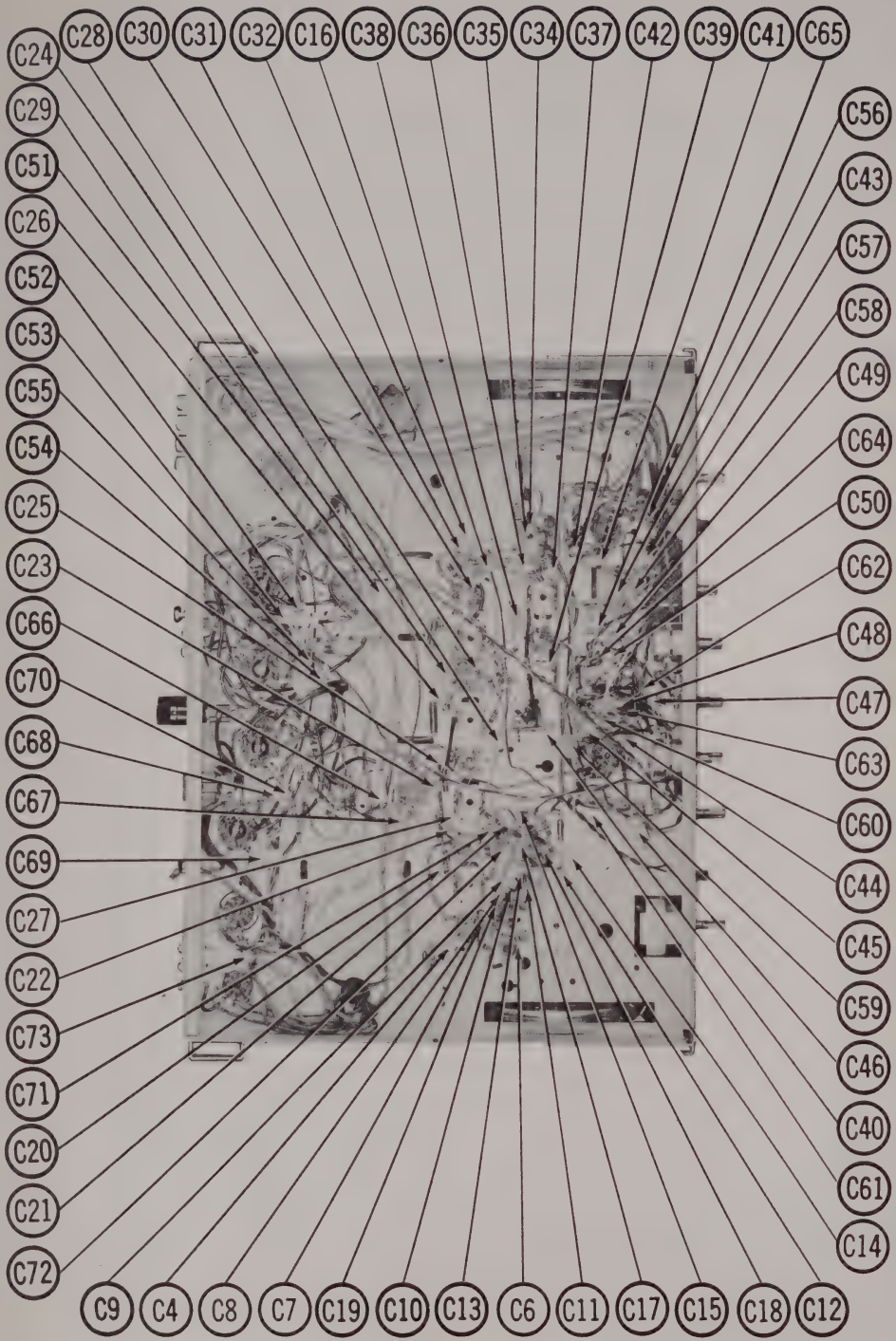
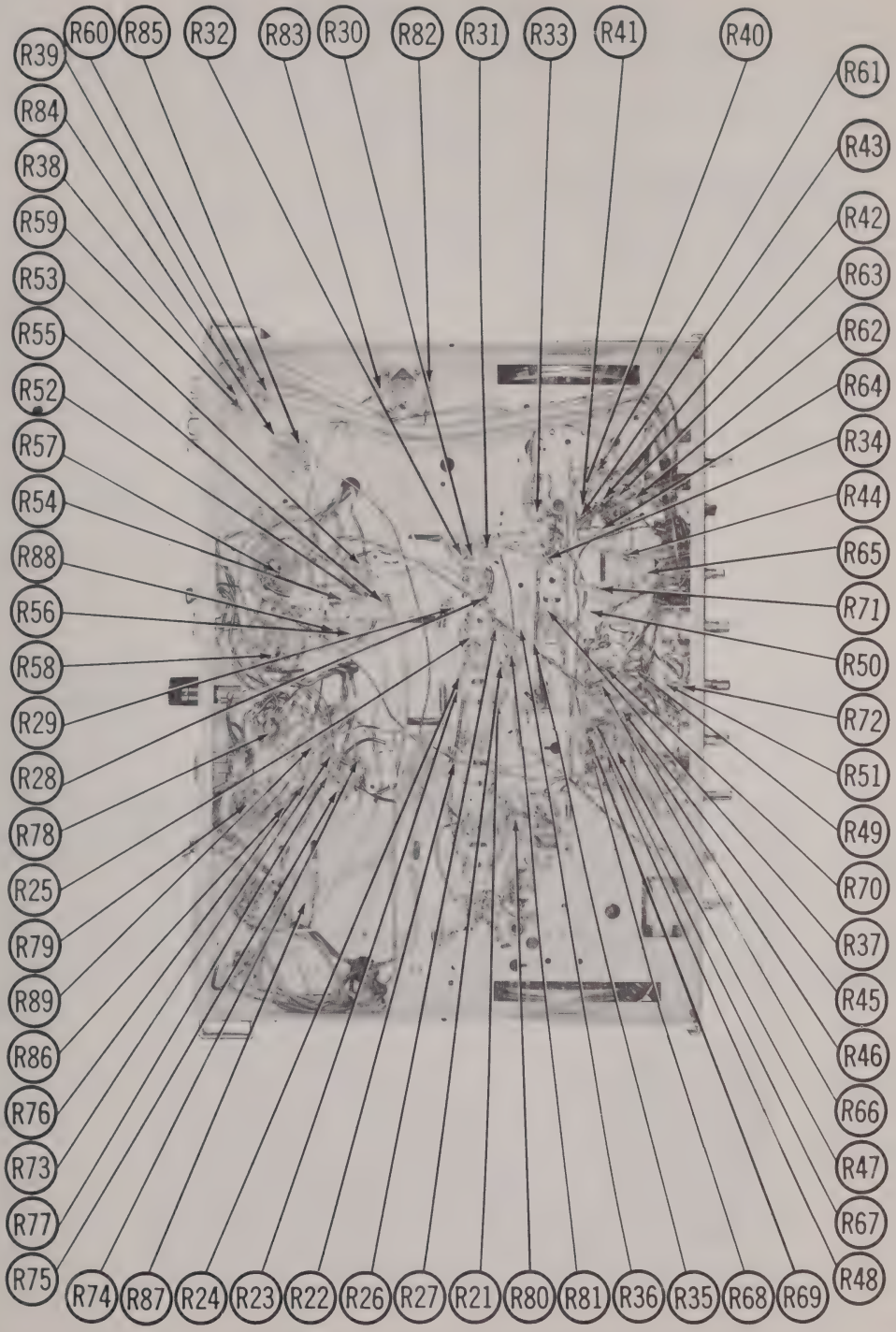
KK581



CHASSIS BOTTOM VIEW-CAPACITOR IDENT.



CHASSIS BOTTOM VIEW-RESISTOR IDENT.

AM ALIGNMENT INSTRUCTIONS

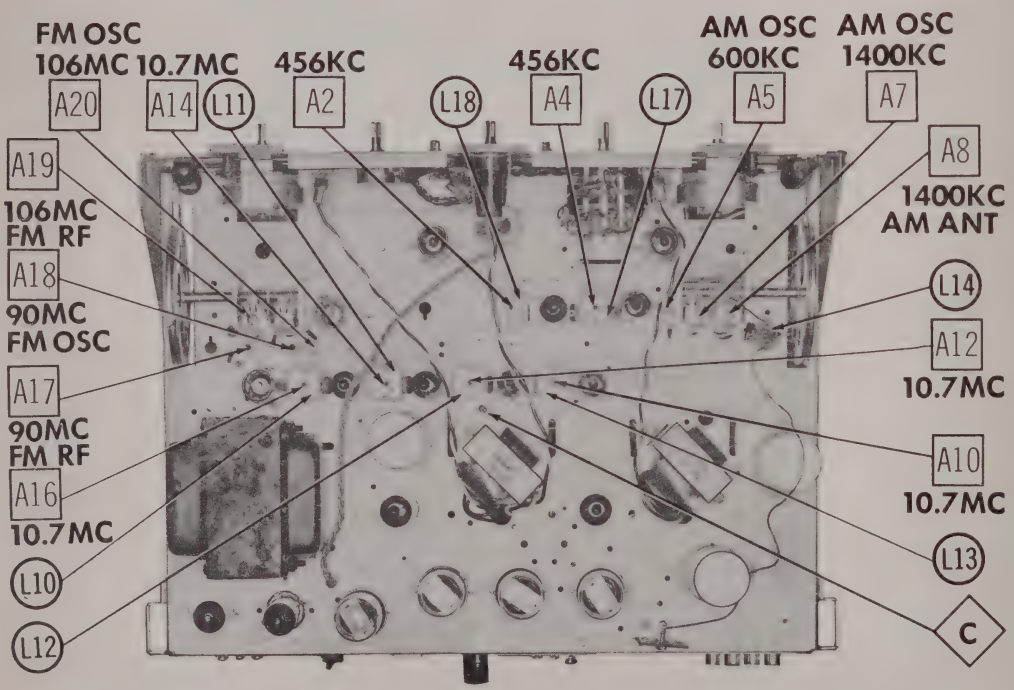
ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.
Suggested Alignment Tools:
A1 thru A4, A6, A9 thru A18...GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5..... GENERAL CEMENT #8721, 8722
WALSCO #2519
A7, A8, A19, A20..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

AM ALIGNMENT – SELECTOR IN AM POSITION

With AM Tuning gang fully closed, set AM pointer to left-hand dial indexing mark on front of chassis panel.
With FM tuning gang fully open, set FM pointer to right-hand dial indexing mark on front of chassis panel.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE AND AC VTVM	ADJUST	REMARKS
1.	High side thru .01mfd to pin 1 (grid) of AM IF Amp. Low side to chassis.	456KC (40KC Swp)	(AM) Tuning gang fully open.	Across AM Output jack.	A1, A2	Adjust for maximum output on VTVM and symmetrical response on scope.
2.	High side thru .1mfd to antenna stator lug of AM tuning gang. Low side to chassis.	"	"	"	A3, A4	"
3.	High side thru 47mmf to AM antenna terminal. Low side to chassis.	600KC (400~ 30% AM)	Second AM dial indexing mark on front panel of chassis.	"	A5, A6	Adjust for maximum output.
4.	"	1400KC	Right-hand AM indexing mark on front panel of chassis.	"	A7, A8	Adjust for maximum output. Repeat Steps 3 and 4.



CHASSIS TOP VIEW—INDUCTOR & ALIGN. IDENTIFICATION

FM ALIGNMENT INSTRUCTIONS

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	High side thru .01mfd to pin 1 (grid) of 2nd FM Limiter. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe thru 1meg to point Ⓐ. Common to chassis.	A9	Adjust for maximum deflection.
6.	"	"	"	DC probe to point Ⓑ. Common to chassis.	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
7.	High side thru .01mfd to pin 1 (grid) of 1st FM Limiter. Low side to chassis.	"	"	DC probe to point Ⓒ. Common to chassis.	A11, A12	Adjust for maximum deflection.
8.	High side thru .01mfd to pin 1(grid) of FM IF. Low side to chassis.	"	"	"	A13, A14	"
9.	High side thru .01mfd to pin 7 (grid) of FM Mixer. Low side to chassis.	"	"	"	A15, A16	"

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	High side thru .01mfd to pin 1(grid)of 2nd FM Limiter. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. thru 47K to point Ⓐ. Low side to chassis.	A9	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
6.	"	"	"	Vert. amp. to point Ⓑ. Low side to chassis.	A10	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A9 for maximum amplitude and straightness of cross-over lines.
7.	High side thru .01mfd to pin 1 (grid) of 1st FM Limiter. Low side to chassis.	"	"	Vert. amp. to point Ⓒ. Low side to chassis.	A11, A12	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
8.	High side thru .01mfd to pin 1 (grid) of FM IF. Low side to chassis.	"	"	"	A13, A14	"
9.	High side thru .01mfd to pin 7 (grid) of FM Mixer. Low side to chassis.	"	"	"	A15, A16	"

FM RF ALIGNMENT — SELECTOR IN FM POSITION

AFC "Off"

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE AND AC VTVM	ADJUST	REMARKS
10.	High side thru 270Ω to FM antenna terminal. Low side to chassis.	90MC (45KC Swp)	(FM) Left-hand FM dial indexing mark on front panel of chassis.	Across Multiplex Output jack.	A17, A18	Adjust for maximum output on VTVM. Use response on scope to be certain the unit is aligned on the correct slope of response.
11.	"	106MC	Second FM dial indexing mark on front panel of chassis.	"	A19, A20	"

FIG. 1

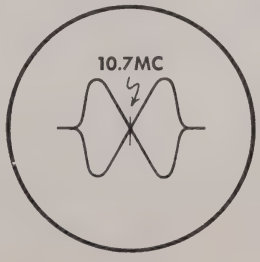


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	FM RF Amp. -FM Mixer	ECC85/6AQ8
V2	FM Osc. -FM AFC	ECC85/6AQ8
V3	FM IF Amplifier	6AU6A
V4	1st FM Limiter	6AU6A
V5	2nd FM Limiter	6AU6A
V6	FM Discriminator	6AL5
V7	AM Converter	6BE6
V8	AM IF Amplifier	6BA6
V9	Left Channel Preamp. - Right Channel Preamp.	ECC83/12AX7
V10	Left Channel AF Amp. - Right Channel AF Amp.	ECC83/12AX7
V11	Left Channel AF Amp. - Left Channel Phase Inv.	ECC83/12AX7
V12	Left Channel Output	6V6GT
V13	Left Channel Output	6V6GT
V14	Right Channel AF Amp. - Right Channel Phase Inv.	ECC83/12AX7
V15	Right Channel Output	6V6GT
V16	Right Channel Output	6V6GT
V17	Rectifier	EZ80/6V4
V18	Rectifier	EZ81/6CA4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA BELL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	450	23B29	AFH2-57	B0450	FP238	TMD-2650	TVL-2764	
B	▬40	450							
C2A	■20	350	23B98	AFH3-121	C0880	FP366.5	TMT-3474	TVL-3753	
B	▬20	350							
C	▲150	50							
C3A	▲40	200	23B37	AFH4-01-60	C0194	FP327.89	TMQ-4104	TVLS-3541 *	
B	■40	200							
C	▬40	200							

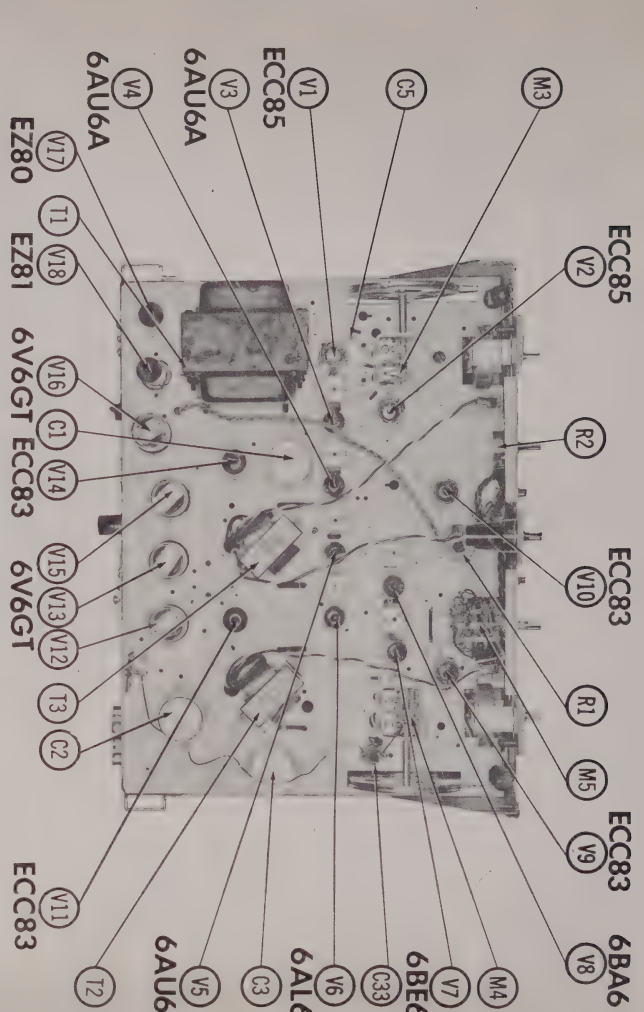
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C5	1000		EF-001	MFT-1000		CCF-102	CT280A	
C6	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C7	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C8	2.2 NPO ± .25mmf		NPO-DI 2.2	DTZ-2R2 829-7	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C9	1-7.5	#25A17						
C10	10 N220 10%	#24X143				*		10TCR-Q10
C11	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C12	680 10%		DI-681	DD-681	5R5T68	CCD-681	GP368	10TS-T68
C13	10 N470 10%	#24B71				*		
C14	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C15	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C16	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C17	15 N750 10%		N750-DI 15	DTN-15	C10Q15U	CCTN-150	CN7-415	10TCU-Q15
C18	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C19	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C20	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C21	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C22	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C23	27 NPO 10%		NPO-DI 25	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C24	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C25	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C26	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C27	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C28	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C29	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C30	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C31	560 10%		DI-560	DD-560	5R5T56	CCD-561	GP356	10TS-T56
C32	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C33	10 N750 10%	(7.5) †	N750-DI 10	DTN-10	C10Q1U	CCTN-101	CN7-410	10TCU-Q10
C34	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C35	6.8 N1500	#24X141				*		
C36	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C37	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C38	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C39	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C40	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C41	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C42	1000 10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C43	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C44	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C45	3000 10%		DI-3000		PM6D3	CCD-302	JL-233	10TS-D30
C46	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C47	390 10%		DI-390	DD-391	L10T39	CCD-391	GP339	10TS-T39
C48	3000 10%		DI-3000		PM6D3	CCD-302	JL-233	10TS-D30
C49	1000 10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C50	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C51	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C52	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C53	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C54	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C55	2.2 NPO ±.25mmf		NPO-DI 2.2	DTZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C56	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C57	1000 10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C58	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C59	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C60	3000 10%		DI-3000		PM6D3	CCD-302	JL-233	10TS-D30
C61	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C62	390 10%		DI-390	DD-391	L10T39	CCD-391	GP339	10TS-T39
C63	3000 10%		DI-3000		PM6D3	CCD-302	JL-233	10TS-D30
C64	1000 10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C65	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C66	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C67	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-47	CN7-447	10TCU-Q47
C68	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C69	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C70	2.2 NPO ±.25mmf		NPO-DI 2.2	DTZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C71	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C72	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C73	10 N470	#24B71						

Bell Part Number.
† Alternate Value.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R5	68Ω				R48	10K			
R6	22K				R49	220K			
R7	1000Ω				R50	47K			
R8	100Ω				R51	27K			
R9	2.2meg				R52	1.2meg			
R10	3.3meg				R53	1800Ω			
R11	330Ω				R54	10meg			
R12	100K				R55	150K			
R13	10K				R56	150K			
R14	33K				R57	470K			
R15	680Ω				R58	470K			
R16	100K				R59	27K			
R17	5600Ω				R60	1meg			
R18	68Ω				R61	47K			
R19	1meg				R62	10K			
R20	100K				R63	470K			
R21	56K				R64	1500Ω			
R22	1meg				R65	220K			
R23	100K				R66	1meg			
R24	100K				R67	10meg			
R25	47K				R68	47K			
R26	47K				R69	10K			
R27	68Ω				R70	220K			
R28	100K				R71	47K			
R29	100K				R72	27K			
R30	270K				R73	1.2meg			
R31	1meg				R74	1800Ω			
R32	100K				R75	10meg			
R33	22K				R76	150K			
R34	10K				R77	150K			
R35	3.3meg				R78	470K			
R36	4700Ω				R79	470K			
R37	68Ω				R80	270Ω			
R38	27K				R81	270Ω			
R39	1meg				R82	250Ω 5W	PW5-250	5W-SQ-250	
R40	10K				R83	250Ω 5W	PW5-250	5W-SQ-250	
R41	47K				R84	330K			
R42	470K				R85	27K			
R43	1500Ω				R86	15K			
R44	220K				R87	2200Ω 2W			
R45	1meg				R88	330K			
R46	10meg				R89	330K			
R47	47K								

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	BELL PART No.	REPLACEMENT DATA
K1	AM Diode RF Filter	100mmf, 100mmf, 47K, 180K	57A19	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BELL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	500K		15A99				FA55A	Volume, Right Channel
B	500K						RUP55A	Volume, Left Channel
C	Shaft						CS3500	
D	Switch						Not Req.	Push-Pull Off-On
R2A	2meg		15A101	B-75	A47-2meg-S	Q11-139	U56	Balance
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	2meg		15A89	B-76	AD47-2meg-Z		FA26A	Bass, Right Channel
B	2meg			SR-76	Not Req.		RU26A	Bass, Left Channel
C	Shaft			Not Req.	KSS-3		CS3500	
R4A	2meg		15A89	B-76	AD47-2meg-Z		FA26A	Treble, Right Channel
B	2meg			SR-76	Not Req.		RU26A	Treble, Left Channel
C	Shaft			Not Req.	KSS-3		CS3500	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		BELL PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	RF Choke (1.1uh)	31A44	BC-561	4602	RTC-8515	T855	① Wound on 47Ω
L2	RF Choke	31A31 ①					
L3	RF Choke (.68uh)	31A24	BC-560	4590	RTC-8514	T803	
L4	FM RF	31A52					
L5	FM Osc.	31A52					

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF) (cont)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		BELL PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L6	RF Choke (1.2uh)	31A53	BC-561	4602	RTC-8515	T855	
L7	RF Choke (5uh)	31A18	SW-631	4609	RTC-8519	T977	
L8	RF Choke (2.5uh)	31A22	BC-563	4606	RTC-8517	T857	
L9	Fil. Choke (5uh)	31A18	SW-631	4609	RTC-8519	T977	
L10	1st FM IF	32C81	FM-254	1463	RTC-8599	T633	
L11	2nd FM IF	32C81	FM-254	1463	RTC-8599	T633	
L12	3rd FM IF	32C81	FM-254	1463	RTC-8599	T633	
L13	Discriminator	32C117	FM-253	1464	RTC-8665	T634	
L14	AM Ant.	32A39	BC-388	70-A	RTC-8731	T500	
L15	RF Choke (1uh)	31A61	BC-561	4602	RTC-8515	T855	
L16	AM Osc.	31A50	BC-393	70-OSC	RTC-8647	T512	
L17	1st AM IF	32C99	BC-352	12-C1	RTC-8632	T607	
L18	2nd AM IF	32C99	BC-353	12-C2	RTC-8633	T608	
L19	Fil. Choke(3.8uh)	31A21	BC-564	4608	RTC-8518	T858	
L20	Fil. Choke(3.8uh)	31A21	BC-564	4608	RTC-8518	T858	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	BELL PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V ⓐ 1.15A	600VCT ⓐ .130A DC	310VCT ⓐ .050A DC	32B119 ①					① Part #23B129 used for 50% Operation.
	SEC. 3	SEC. 4	SEC. 5						
	6.3VCT ⓐ 3.5A	6.3V ⓐ 3.6A							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	BELL PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	7400Ω CT	16Ω Tap ⓐ 8Ω	32B110				S-28X ①	① Drill New Mounting Hole(s)
T3	7400Ω CT	16Ω Tap ⓐ 8Ω	32B110				S-28X ①	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BELL PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	3A 250V	53A6	53A8	312003 (3AG 3A 250V)	342001	AGC 3	HKP

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		BELL PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N541	42A14		1N295	1N295	AM Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	BELL PART No.	NOTES
M3	Tuning Cap.	25B18	FM, 2 Gang
M4	Tuning Cap.	25B20	AM, 2 Gang (Ant. 19–377mmf, Osc. 17–125mmf)
M5	Switch	43B95	Function Selector (Rotary Wafer Type)
M6	Switch	43A67	AFC (SPDT Slide Type)
M7	Switch	43A67	Mono-Stereo (SPDT Slide Type)

CABINETS & CABINET PARTS

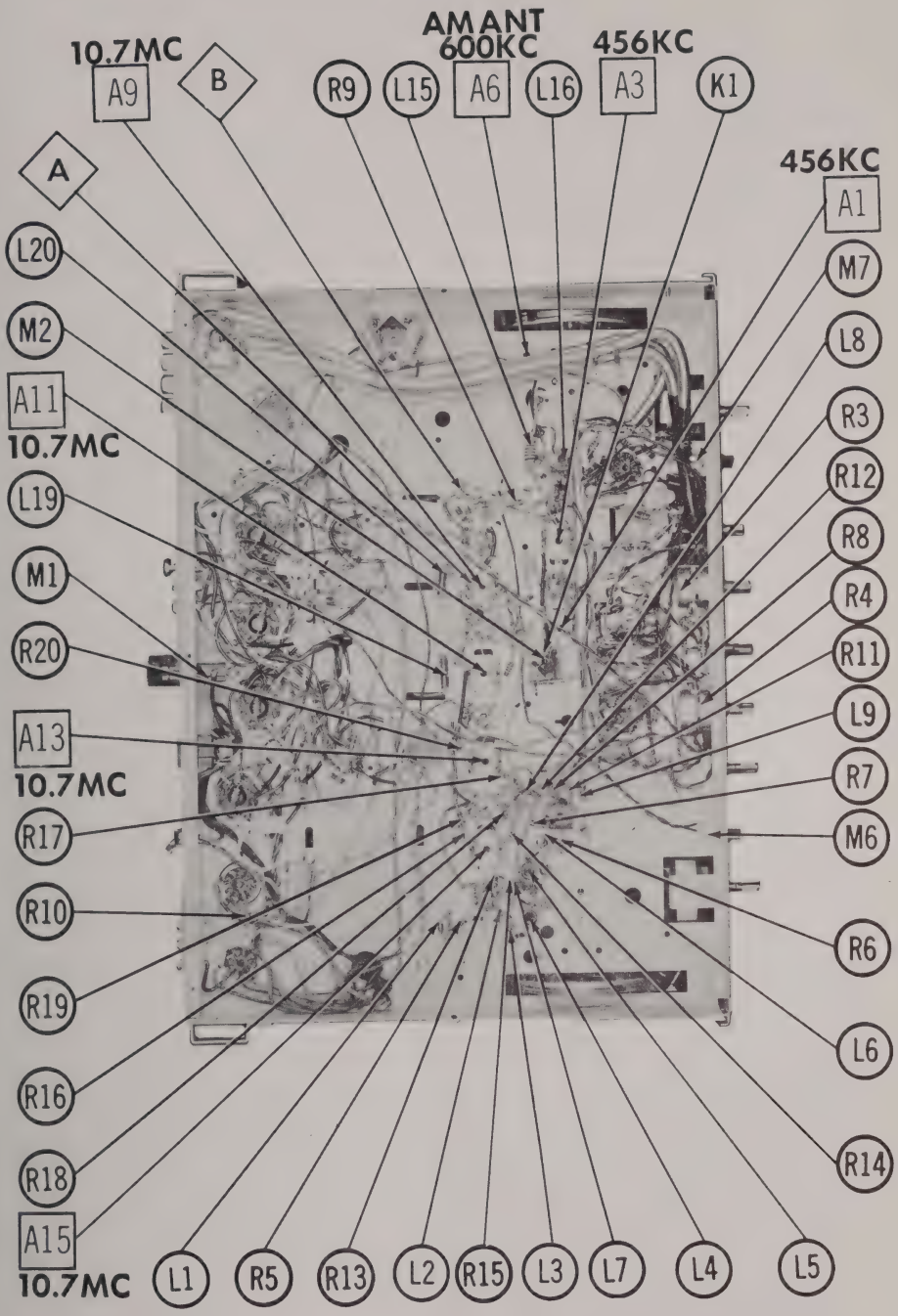
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Glass	94C71	
Dial Pointer	77A72	
Knob	84A59	Volume, Balance (With Indicator)
Knob	84A60	Tuning
Knob	84A61	Bass, Treble
Knob	84A70	Function Selector

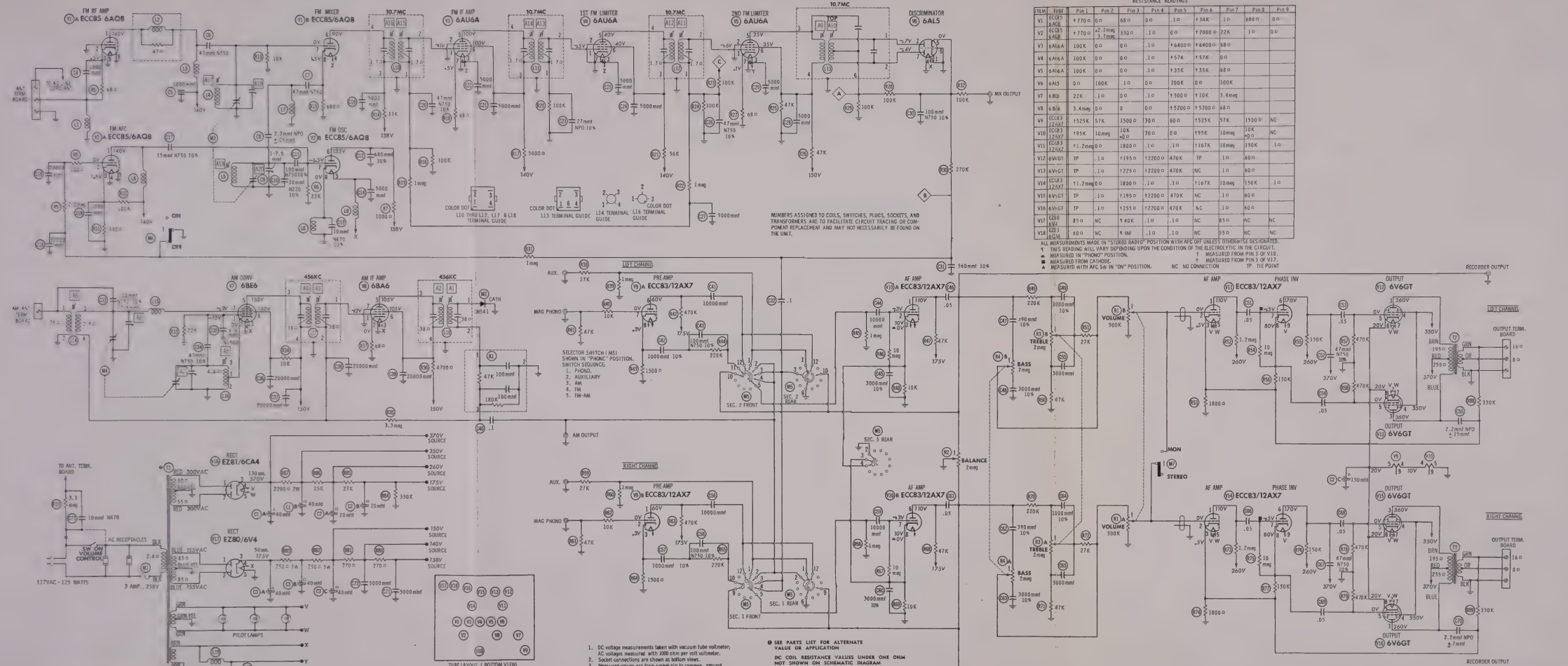
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



CHASSIS BOTTOM VIEW
ALIGN., INDUCTOR, RESISTOR(R3-R20) & MISC. IDENT.



RESISTANCE READINGS

TERM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC85 6AQ8	†770Ω	0Ω	68Ω	0Ω	.1Ω	†34K	.1Ω	680Ω	0Ω
V2	ECC85 6AQ8	†770Ω	▲2.2meg 3.7meg	330Ω	.1Ω	0Ω	†2000Ω	22K	.1Ω	0Ω
V3	6AU6A	100K	0Ω	0Ω	.1Ω	†6400Ω	†6400Ω	68Ω		
V4	6AU6A	100K	0Ω	0Ω	.1Ω	†57K	†57K	0Ω		
V5	6AU6A	100K	0Ω	0Ω	.1Ω	†35K	†35K	68Ω		
V6	6AL5	0Ω	100K	.1Ω	0Ω	200K	0Ω	100K		
V7	6BL6	22K	.1Ω	0Ω	.1Ω	†500Ω	†10K	3.4meg		
V8	6BL6	3.4meg	0Ω	0	0Ω	†5200Ω	†5200Ω	68Ω		
V9	ECC83 12AX7	1525K	57K	1500Ω	30Ω	60Ω	†525K	57K	1500Ω	NC
V10	ECC83 12AX7	195K	10meg	10K ±0Ω	30Ω	0Ω	†95K	10meg	10K ±0Ω	NC
V11	ECC83 12AX7	†1.2meg	0Ω	1800Ω	.1Ω	.1Ω	†167K	10meg	150K	.1Ω
V12	6V6GT	TP	.1Ω	†195Ω	†2200Ω	470K	TP	.1Ω	60Ω	
V13	6V6GT	TP	.1Ω	†225Ω	†2200Ω	470K	NC	.1Ω	60Ω	
V14	ECC83 12AX7	†1.2meg	0Ω	1800Ω	.1Ω	.1Ω	†167K	10meg	150K	.1Ω
V15	6V6GT	TP	.1Ω	†195Ω	†2200Ω	470K	NC	.1Ω	60Ω	
V16	6V6GT	TP	.1Ω	†255Ω	†2200Ω	470K	NC	.1Ω	60Ω	
V17	EZ80 6V4	85Ω	NC	¶40K	.1Ω	.1Ω	NC	85Ω	NC	NC
V18	EZ81 6CA4	60Ω	NC	¶INF	.1Ω	.1Ω	NC	55Ω	NC	NC

ALL MEASUREMENTS MADE IN "STEREO RADIO" POSITION WITH AFC OFF UNLESS OTHERWISE DESIGNATED.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
▲ MEASURED IN "PHONO" POSITION.
† MEASURED FROM PIN 3 OF V18.
■ MEASURED FROM CATHODE.
‡ MEASURED FROM PIN 3 OF V17.
▲ MEASURED WITH AFC SW IN "ON" POSITION.
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PHOTOFACT® Folder with CIRCUITRACE®

CAPEHART MODEL T8-201

CAPEHART MODEL T8-201

CAPEHART MODEL T8-201

TRADE NAME	Capehart Model T8-201
MANUFACTURER	Capehart Corp., 123rd Street, Richmond Hill 18, Long Island, N. Y.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	3 Volts DC
RATING	20MA @ 3 Volts DC (No Signal, Min. Volume)
	25MA @ 3 Volts DC (Signal, Normal Volume)
TUNING RANGE	—BROADCAST 540 — 1600KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment tools: A1, A2, A3, A5. . GENERAL CEMENT #8607, 9291, 9294
WALSCO #2520, 2522, 2523, 2524, 2534, 2537
A4, A6..... GENERAL CEMENT #5000, 5003, 5066, 8271, 8272, 8276, 8277, 8290, 8609, 8722, 9150, 9298
WALSCO #2515, 2516, 2518, 2519, 2525, 2541

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1600KC	1600KC	"	A4	"
3.	"	600KC	600KC	"	A5	"
4.	"	1400KC	1400KC Signal.	"	A6	Adjust for maximum output. Repeat Steps 2, 3 and 4.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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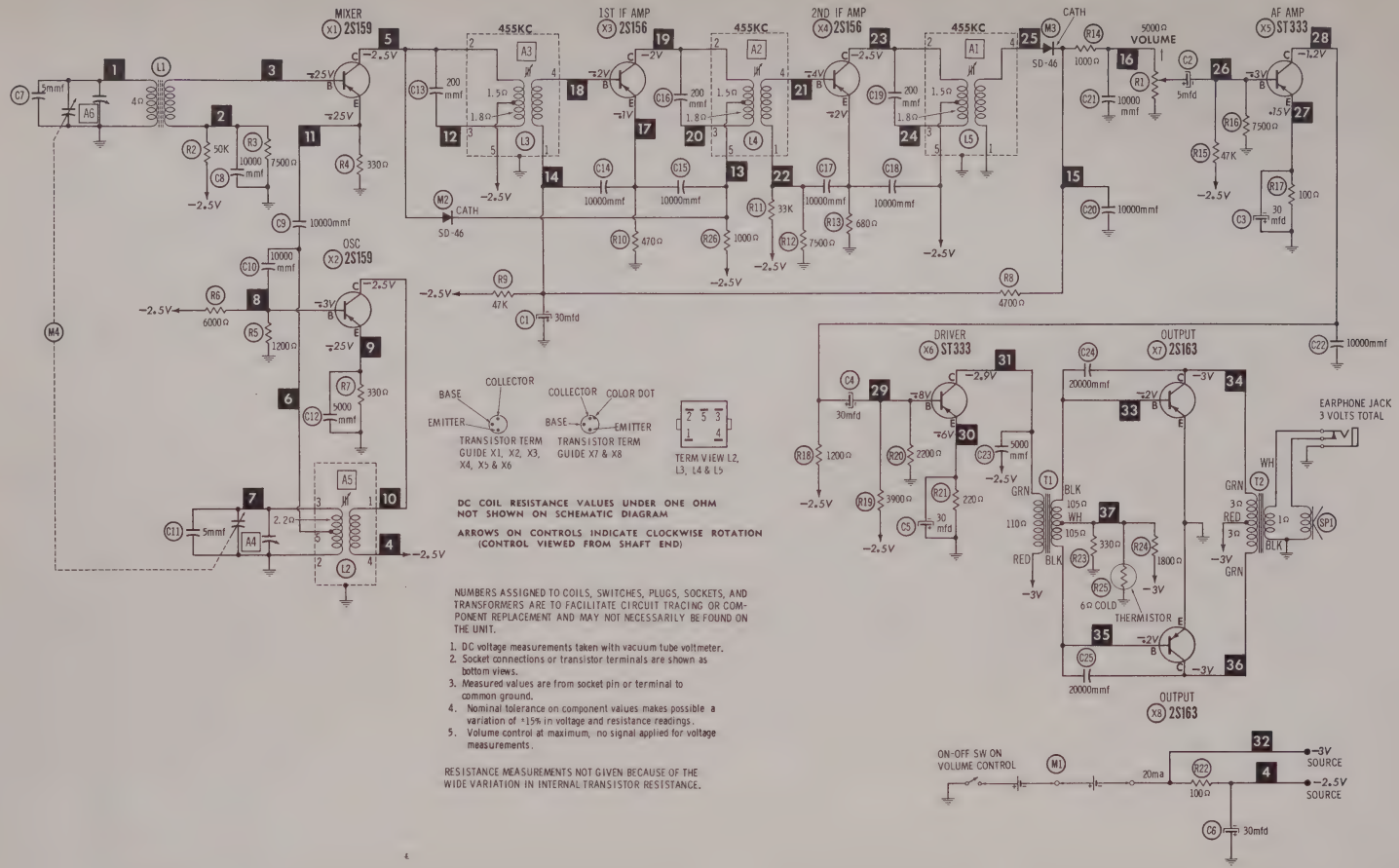
the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America



DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

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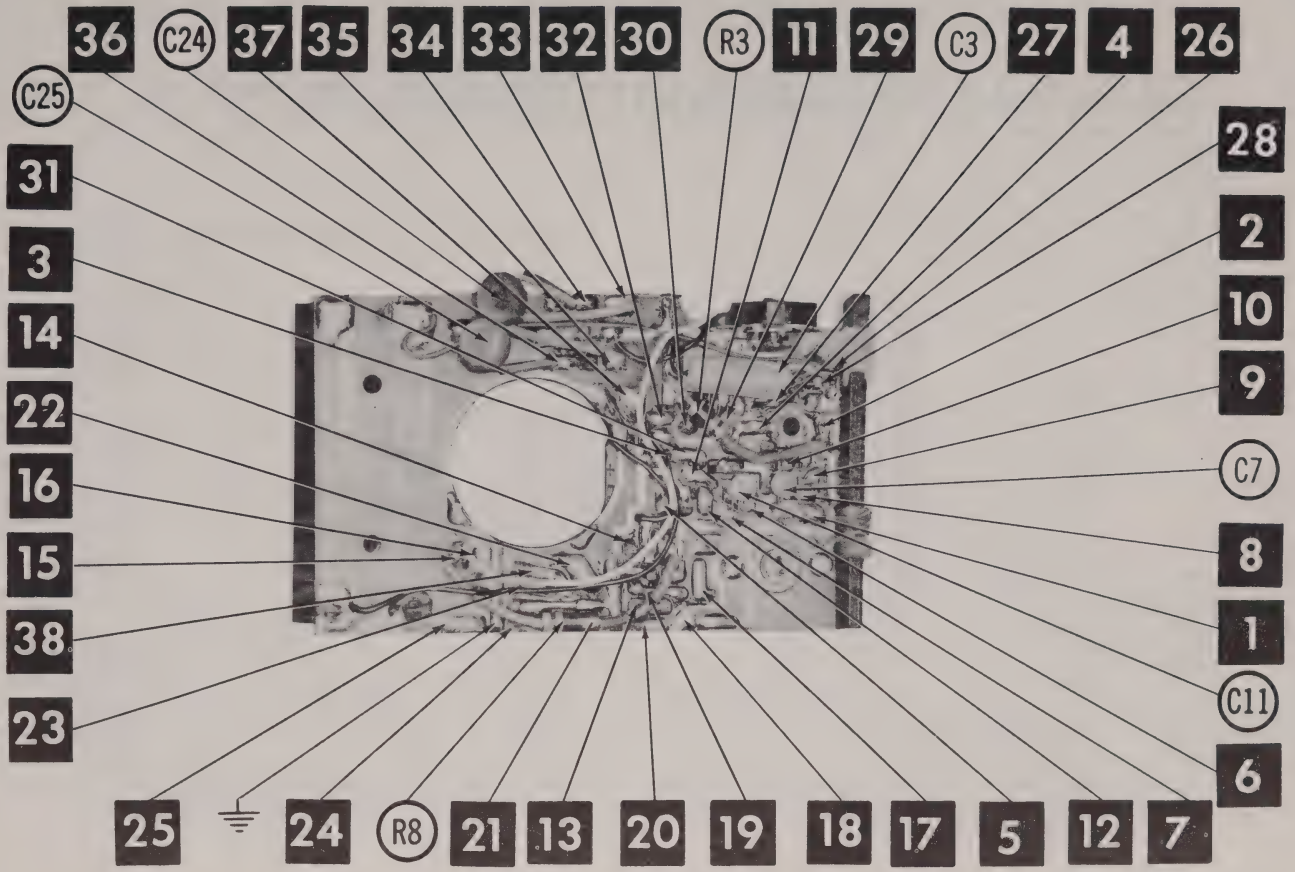
CAPEHART MODEL T8-201



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PRINTED BOARD

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2S159	Mixer				PNP
X2	2S159	Oscillator				PNP
X3	2S156	1st IF Amplifier				PNP
X4	2S156	2nd IF Amplifier				PNP
X5	ST333	AF Amplifier	2N406			PNP
X6	ST333	Driver	2N406			PNP
X7	2S163	Output	2N408			PNP
X8	2S163	Output	2N408			PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	CAPEHART PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	30	6		PTT6030	NLW30-6	TT6X30	ML30-6	TE-1092	
C2	5	6		PTT-6005	NLW5-6	TT6X5	ML5-6	TE-1084	
C3	30	3		PTT-3030	NLW30-6	TT6X30	ML30-6	TE-1092	
C4	30	6		PTT6030	NLW30-6	TT6X30	ML30-6	TE-1092	
C5	30	6		PTT6030	NLW30-6	TT6X30	ML30-6	TE-1092	
C6	30	6		PTT6030	NLW30-6	TT6X30	ML30-6	TE-1092	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA						
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C7	5		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50	
C8	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10	
C9	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10	
C10	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10	
C11	5		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50	
C12	5000		C80V502AM	DM-502	H-05D5		TA-250	TG-D50	
C13	200		C80V220AM	DM-201	L10T2	CCD-201	GP320	10TS-T20	
C14	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10	
C15	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10	
C16	200		C80V220AM	DM-201	L10T2	CCD-201	GP320	10TS-T20	
C17	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10	
C18	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10	
C19	200		C80V220AM	DM-201	L10T2	CCD-201	GP320	10TS-T20	
C20	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10	
C21	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10	
C22	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10	
C23	5000		C80V502AM	DM-502	H-05D5		TA-250	TG-D50	
C24	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20	
C25	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CAPEHART PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/4		B16-214				Volume & Switch

RESISTORS

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	50K				R15	47K			
R3	7500Ω				R16	7500Ω			
R4	330Ω				R17	100Ω			
R5	1200Ω				R18	1200Ω			
R6	6000Ω				R19	3900Ω			
R7	330Ω				R20	2200Ω			
R8	4700Ω				R21	220Ω			
R9	47K				R22	100Ω			
R10	470Ω				R23	330Ω			
R11	33K				R24	1800Ω			
R12	7500Ω				R25	6Ω Cold			
R13	680Ω				R26	100Ω			
R14	1000Ω								

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		CAPEHART PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick						
L2	Oscillator						
L3	1st IF						
L4	2nd IF						
L5	3rd IF						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	CAPEHART PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1	1	320950					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	CAPEHART PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	80Ω CT	8-8Ω	320951		TA-19			

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	CAPEHART PART No.	QUAM PART No.	
SP1	2 1/4"	PM	6-8Ω			

BATTERIES

ITEM No.	VOLTAGE	CAPEHART PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	UM-3A *		930 *		1015 *		M-15R *	* 2 Required

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		CAPEHART PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	SD-46		1N60	1N60	AGC (Pigtail)
M3	SD-46		1N60	1N60	Detector (Pigtail)

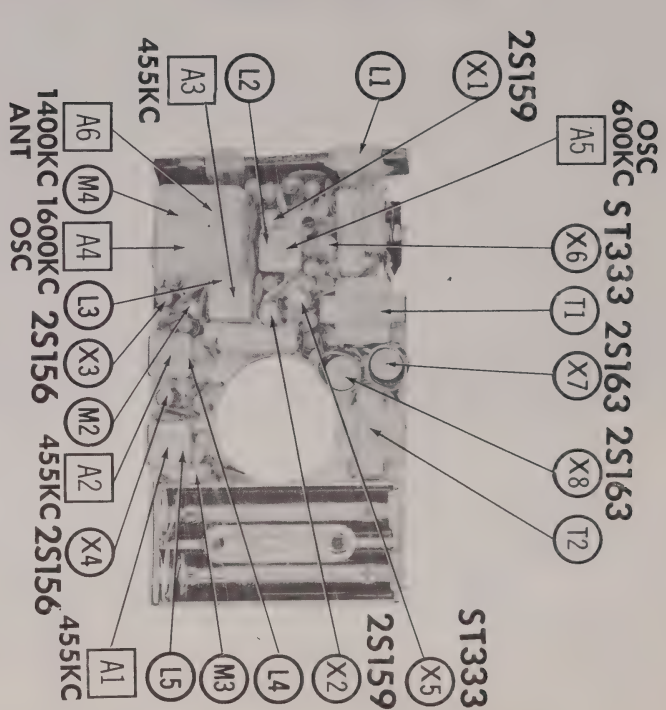
MISCELLANEOUS

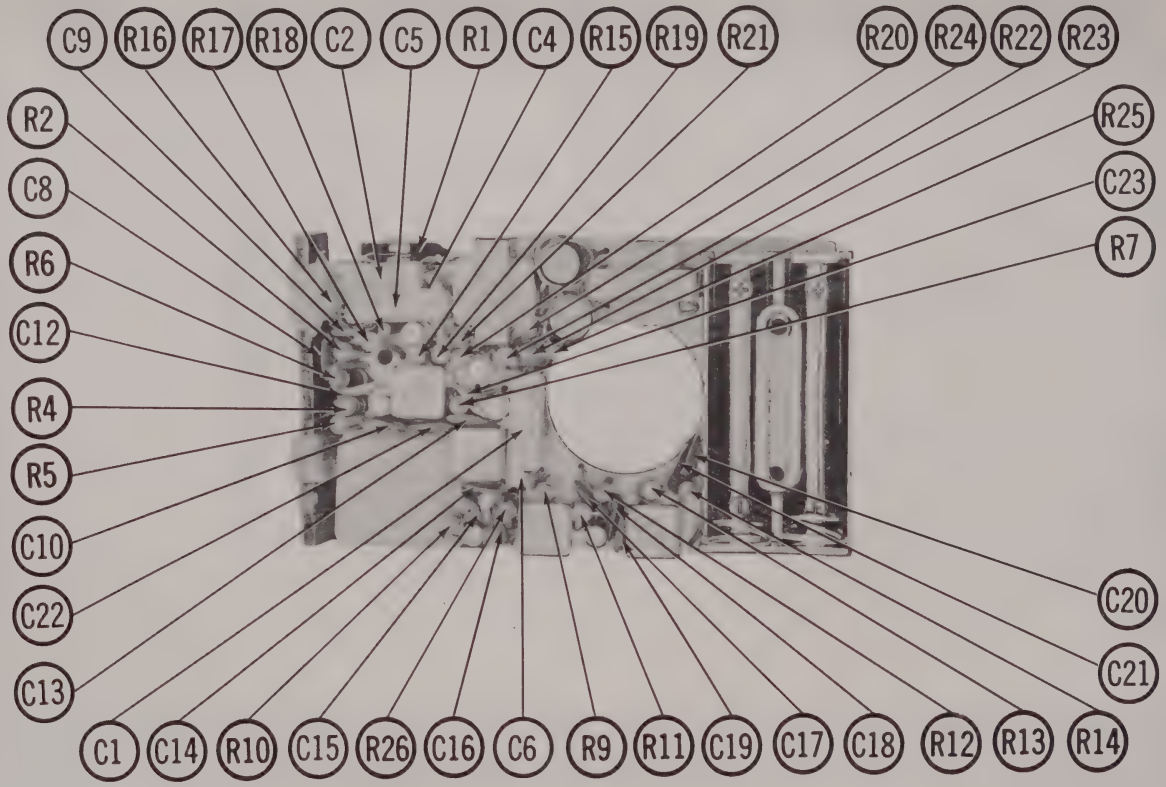
ITEM No.	PART NAME	CAPEHART PART No.	NOTES
M4	Tuning Cap.		2 Gang

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



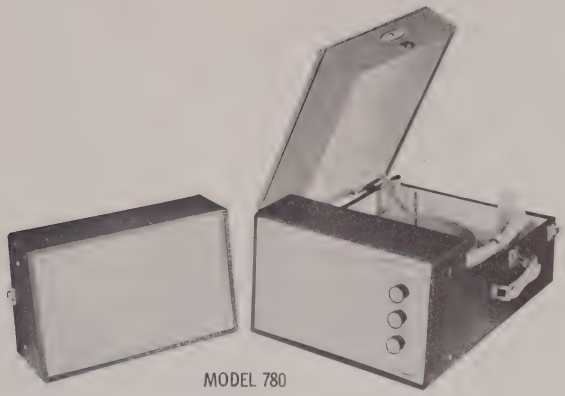


CHASSIS TOP VIEW-CAPACITOR AND RESISTOR IDENT.

PHOTOFACT® Folder

GOLDEN SHIELD
MODELS 700, 701, 780

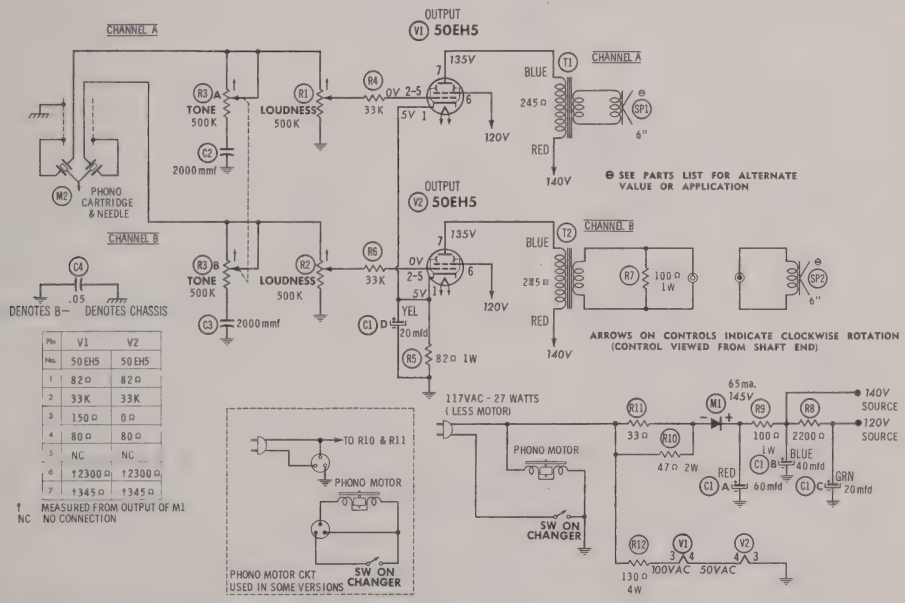
GOLDEN SHIELD
MODELS 700, 701, 780



MODEL 780

TRADE NAME	Golden Shield Models 700, 701, 780
SUPPLIER	Golden Shield Corp., Service Dept., 700 Ellicott Street, Batavia, N. Y.
TYPE SET	AC Operated 2 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 27 Watts, .29 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER – SEE SIMILAR MONARCH UA12 – PHOTOFACT SET 465 FOLDER 6



Pin No.	V1	V2
1	82Ω	82Ω
2	33K	33K
3	150Ω	0Ω
4	80Ω	80Ω
5	NC	NC
6	†2300Ω	†2300Ω
7	†345Ω	†345Ω

† MEASURED FROM OUTPUT OF M1
NC NO CONNECTION

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KT577

SET 540 FOLDER 10

PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Channel A Output	50EH5	V2	Channel B Output	50EH5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Golden Shield PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	60	150	161-4031	PR4-295	BBRQ0789.5	WQ410	TDLT-7 TD-20-150	TVA-4618	
B	40	150							
C	20	150							
D	20	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C3	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C4	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Golden Shield PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	500K	1/2	153-0211	B-60	A47-500K-Z	Q13-133	U48	Loudness, Channel A
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	500K	1/2	153-0211	B-60	A47-500K-Z	Q13-133	U48	Loudness, Channel B
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	500K	1/2	153-0234	B-60	AD47-500K-S		FA55A	Tone, Channel B
B	500K	1/2		SR-60	Not Req.		RU55A	Tone, Channel A
C	Shaft			Not Req.	KSS-3		CS3500	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R4	33K				R9	100Ω 1W			
R5	82Ω 1W				R10	47Ω 2W			
R6	33K				R11	33Ω			
R7	100Ω 1W				R12	130Ω 4W	PW 5-130	5W-SQ-130	
R8	2200Ω								

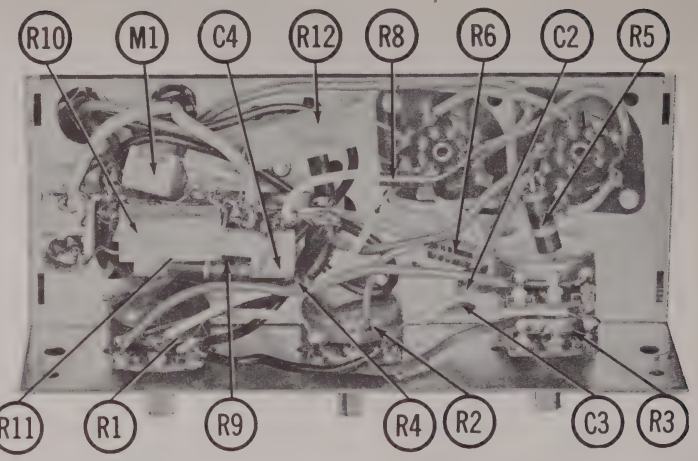
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Golden Shield PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	5100Ω	3-4Ω	143-0087	A-3026①	A-3877①	24S48①	S-6Z	① Drill New Mounting Hole(s).
T2	5100Ω	3-4Ω	143-0087	A-3026①	A-3877①	24S48①	S-6Z	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Golden Shield PART No.	QUAM PART No.	
SP1	6"	PM	3-4Ω	SP-609	6A21	
SP2	6"	PM	3-4Ω	SP-609		
	5"	PM		539-0513 ♣		
	2½"	PM		539-2001 ♣		♣ May be used in some versions.

CHASSIS—BOTTOM VIEW



POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	Golden Shield PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.065A	517-0024	1N1763	2F4	SR200	

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	Golden Shield PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M2			76TS	N8-7* N8-3*	96T	Not Req.	12TH-S	Not Req.	
	916-0019	902-0014* (LP) 902-0015* (78RPM)	76TS	N8-7* N8-3*	96T	Not Req.	12TH-S	Not Req.	Used in some versions.

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	740-0369	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder

HEATH
MODELS SA-3, W-SA-3

HEATH
MODELS SA-3, W-SA-3

HEATH
MODELS SA-3, W-SA-3

TRADE NAME	Heath Models SA-3 (Kit), W-SA-3 (Wired)
MANUFACTURER	Heath Co., A Subsidiary of Daystrom, Inc., Benton Harbor, Michigan
TYPE SET	AC Operated 5 Tube Stereo Amplifier
POWER SUPPLY	110 – 120 Volts AC, 50–60 Cycles RATING 70 Watts, .7 Amp. @117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KV649

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PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
	• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •				
V1	Channel A AF Amp.	7199	V4	Channel B Output	EL84/6BQ5
V2	Channel A Output	EL84/6BQ5	V5	Rectifier	EZ81/6CA4
V3	Channel B AF Amp.	7199			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA HEATH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	450	25-69	AFH4-15-30	C0330	FP376.9	TMT-3745	TVL-3786	
B	■40	450			BR2035	TC55	TD-20-350	TVA-1608	
C	▲20	350							
D	20	250							
C2	20	150	25-19	PRS1440	BBR20-150	TC45	TD-20-150	TVA-1410	
C3	20	150	25-19	PRS1440	BBR20-150	TC45	TD-20-150	TVA-1410	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

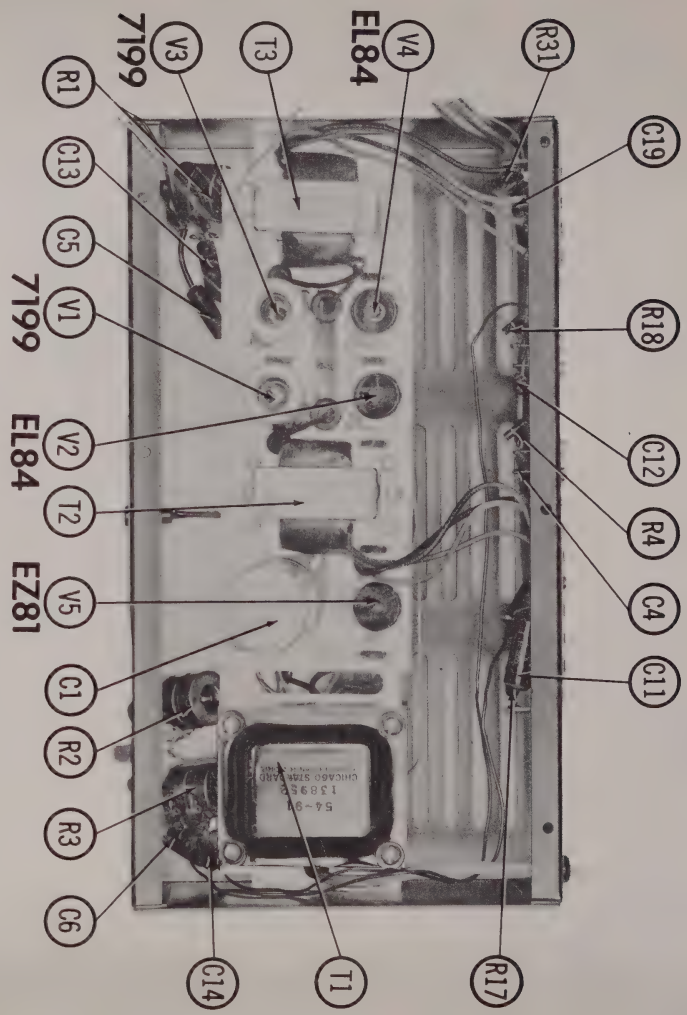
ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C5	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C6	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C7	150 N2200 10%	#21-11				*		
C8	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C9	.02 600V		P688N-02	DD-203	CUB6S2	6DP-2-203	GEM-612	6TM-S20
C10	.02 600V		P688N-02	DD-203	CUB6S2	6DP-2-203	GEM-612	6TM-S20
C11	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C12	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C13	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C14	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C15	150 N2200 10%	#21-11				*		
C16	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C17	.02 600V		P688N-02	DD-203	CUB6S2	6DP-2-203	GEM-612	6TM-S20
C18	.02 600V		P688N-02	DD-203	CUB6S2	6DP-2-203	GEM-612	6TM-S20
C19	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
# Heath Part Number.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA HEATH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg		12-19	F1-52				Volume, Channel A
B	1meg			R2-52				Volume, Channel B
C	Spring			AK-32				Friction Drive
R2A	1meg		12-20	B-70	AD47-1meg-Z		FA16A	Treble, Channel A
B	1meg			SR-70	Not Req.		RU16A	Treble, Channel B
C	Shaft			Not Req.	FS-3		CS3500	
R3A	50K		12-18	B-32	AD47-50K-S		FB54A	Bass, Channel A
B	50K			SR-32	Not Req.		RU54A	Bass, Channel B
C	Shaft			Not Req.	FS-3		CS3500	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R4	1meg			
R5	1meg			
R6	100K			
R7	390K			
R8	680Ω			
R9	330Ω			
R10	1meg			
R11	100K			
R12	1000Ω			
R13	470K			
R14	3900Ω			
R15	175Ω 5W	PW5-175	5W-SQ-175	
R16	27K			
R17	68Ω 1W			
R18	1meg			
R19	1meg			
R20	100K			

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R21	390K			
R22	680Ω			
R23	330Ω			
R24	1meg			
R25	100K			
R26	1000Ω			
R27	470K			
R28	3900Ω			
R29	175Ω 5W	PW5-175	5W-SQ-175	
R30	27K			
R31	68Ω 1W			
R32	4700Ω			
R33	4700Ω 1W			
R34	110Ω 5W	PW5-110	5W-SQ-110	
R35	100K			
R36	10K			
R37	10K			

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	HEATH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V Ⓐ .7A	520VCT Ⓐ .100A DC	6.3V Ⓐ 3.3A	54-91					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	HEATH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5100Ω	16Ω Tap Ⓐ 8Ω, 4Ω	51-42			24S91 ①	S-29X ①	① Use Original Frame
T3	5100Ω	16Ω Tap Ⓐ 8Ω, 4Ω	51-42			24S91 ①	S-29X ①	

MISCELLANEOUS

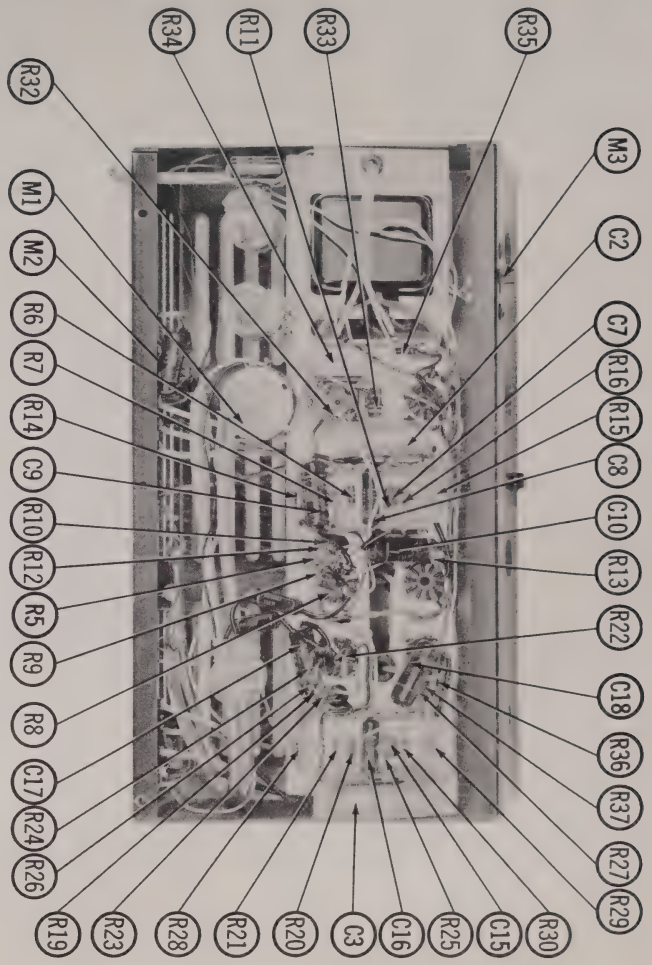
ITEM No.	PART NAME	HEATH PART No.	NOTES
M1	Switch	63-214	Function Selector, Rotary Wafer Type
M2	Switch	60-2	Phase (DPDT Slide Type)
M3	Switch	60-1	Power Off-On (SPST Slide Type)

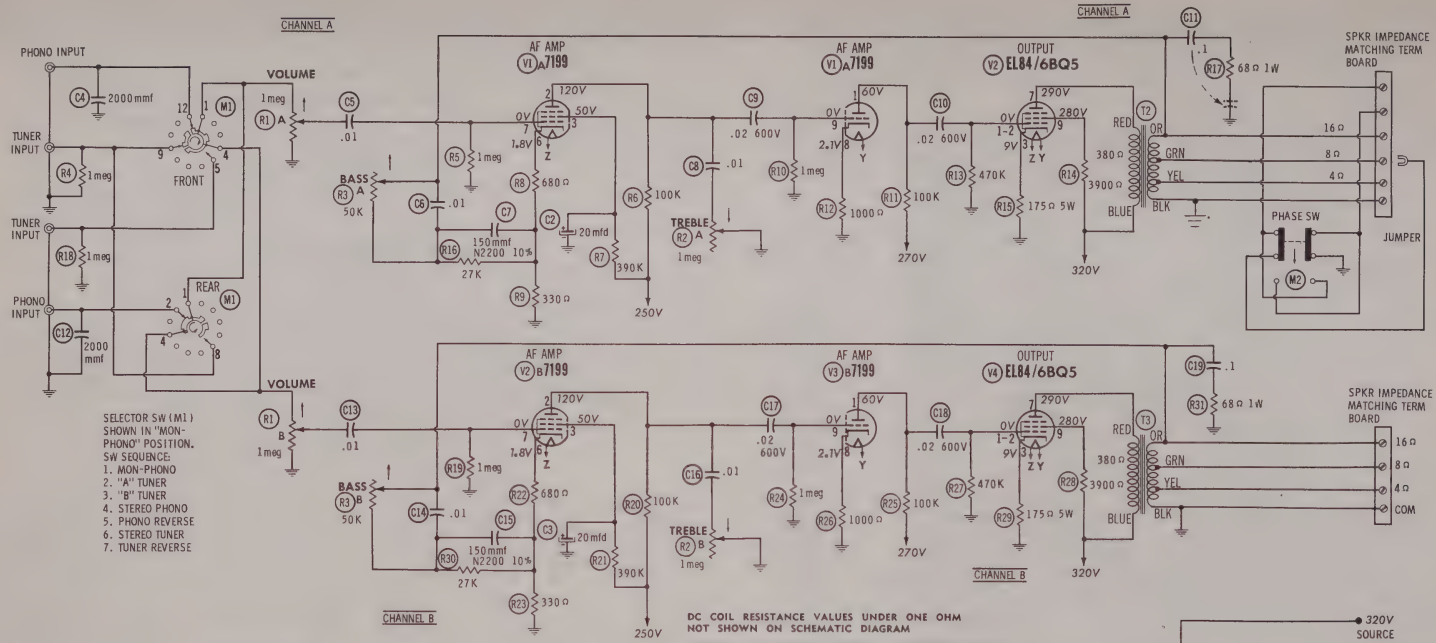
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	462-84	Bass, Treble, Function Selector
Knob	462-70	Loudness (Outside)
Knob	462-71	Loudness (Inside)

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	7199	†105K	†110K	†400K	FILS	FILS	1000Ω	1meg	1000Ω	1meg
V2	EL84 6BQ5	NC	470K	175Ω	FILS	FILS	NC	†490Ω	NC	†4000Ω
V3	7199	†105K	†110K	†400K	FILS	FILS	1000Ω	1meg	1000Ω	1meg
V4	EL84 6BQ5	NC	470K	175Ω	FILS	FILS	NC	†490Ω	NC	†4000Ω
V5	EZ81 6CA4	52Ω	NC	¶ INF	FILS	FILS	NC	48Ω	NC	NC

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT
† MEASURED FROM PIN 3 OF V5 NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter. AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of components values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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HEATH
MODELS SA-3, W-SA-3

PHOTOFACT® Folder

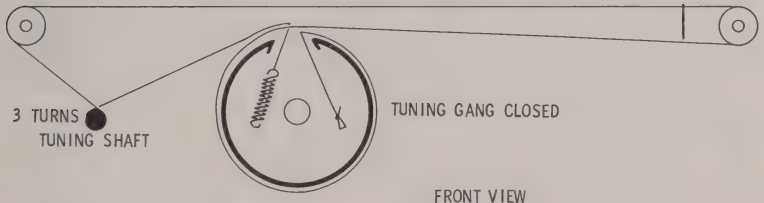
LAFAYETTE
MODEL SP-172 (FM-100)

LAFAYETTE
MODEL SP-172 (FM-100)

LAFAYETTE
MODEL SP-172 (FM-100)

TRADE NAME	LaFayette Model SP-172 (FM-100)
SUPPLIER	LaFayette Radio, 185-08 Liberty Avenue, Jamaica 33, N. Y.
TYPE SET	Battery Operated 6 Tube Universal Type Automobile FM Tuner
POWER SUPPLY	12 Volt Storage Battery (Negative Ground) RATING 1.6 Amp. @ 12.6 Volts DC
TUNING RANGE—FREQ. MOD.	88 – 108MC

DIAL CORD STRINGING



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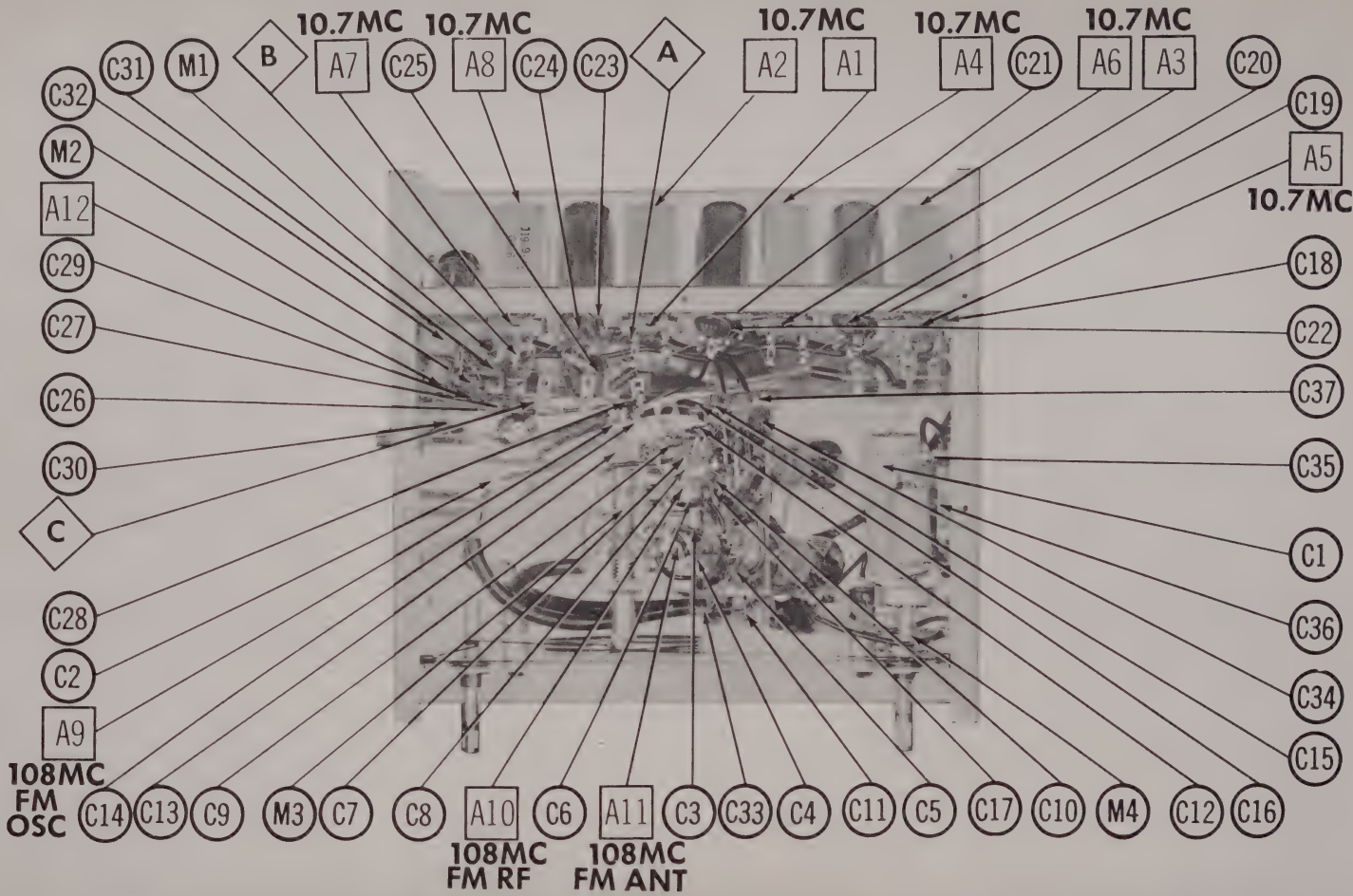
KD556

SET 540 FOLDER 12



CHASSIS TOP VIEW-ALIGNMENT, CAPACITOR & MISC. IDENT.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.
Suggested Alignment Tools: A1 thru A8..... GENERAL CEMENT #5097, 8727
WALSCO #2515
A9, A10, A11..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM – SELECTOR IN FM-DEF. POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .001mfd to pin 2 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	FM-DEF. Point of non-interference.	DC probe to point (A). Common to chassis.	A1, A2, A3, A4, A5, A6	Adjust for maximum output.
2.	"	"	"	DC probe thru 1meg to point (B). Common to chassis.	A7	"
3.	"	"	"	DC probe to point (C). Common to chassis.	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM-DEF. POSITION

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1.	High side thru .001mfd to pin 2 (grid) of Mixer. Low side to chassis.	10.7MC (450KC Swp)	(FM-DEF.) Point of non-interference.	Vert. amp. to point (A). Low side to chassis.	A1, A2, A3, A4, A5, A6	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
2.	"	"	"	Vert. amp. thru 47K to point (B). Low side to chassis.	A7	"
3.	"	"	"	Vert. amp. to point (C). Low side to chassis.	A8	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A7 for maximum amplitude and straightness of cross-over lines.

RF ALIGNMENT – SELECTOR IN FM-DEF. POSITION

Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	High side thru 10mmf to antenna input. Low side to chassis.	108MC (Unmod.)	(FM-DEF.) 108MC	DC probe to point (A). Common to chassis.	A9, A10, A11	Adjust for maximum deflection.
5.	"	88MC	88MC	"	L5, L4, L1	"

AM MODULATED OSCILLATOR ALIGNMENT

Connect unit to AM auto receiver. With switch in AM position, tune AM receiver to clear point near 900KC. Switch to FM position. Tune FM tuner to a known FM station frequency and adjust A12 for maximum volume.

FIG. 1

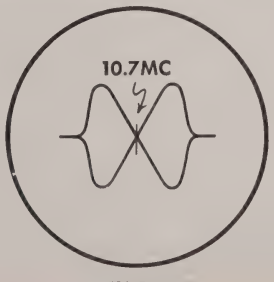
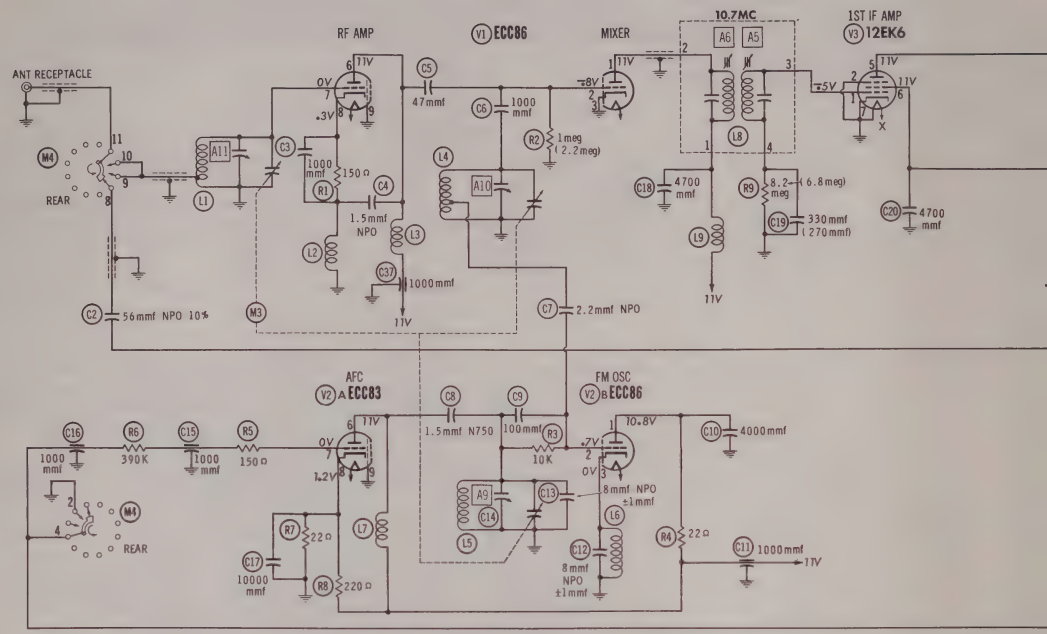


FIG. 2



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC86	22Ω	1meg	0Ω	.1Ω	.1Ω	22Ω	0Ω	150Ω	0Ω
V2	ECC86	44Ω	10K	0Ω	0Ω	.1Ω	22Ω	1 meg ▲ 400K	22Ω	0Ω
V3	12EK6	8.2meg	0Ω	0Ω	.1Ω	22Ω	22Ω	0Ω		
V4	12EK6	8.2meg	0Ω	0Ω	.1Ω	22Ω	22Ω	0Ω		
V5	12EK6	220K	0Ω	.1Ω	0Ω	900Ω	900Ω	0Ω		
V6	12AD6	150K	.1Ω	.1Ω	0Ω	45Ω	22Ω	470K		

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE INDICATED
▲ MEASURED IN "AFC DEFEAT" POSITION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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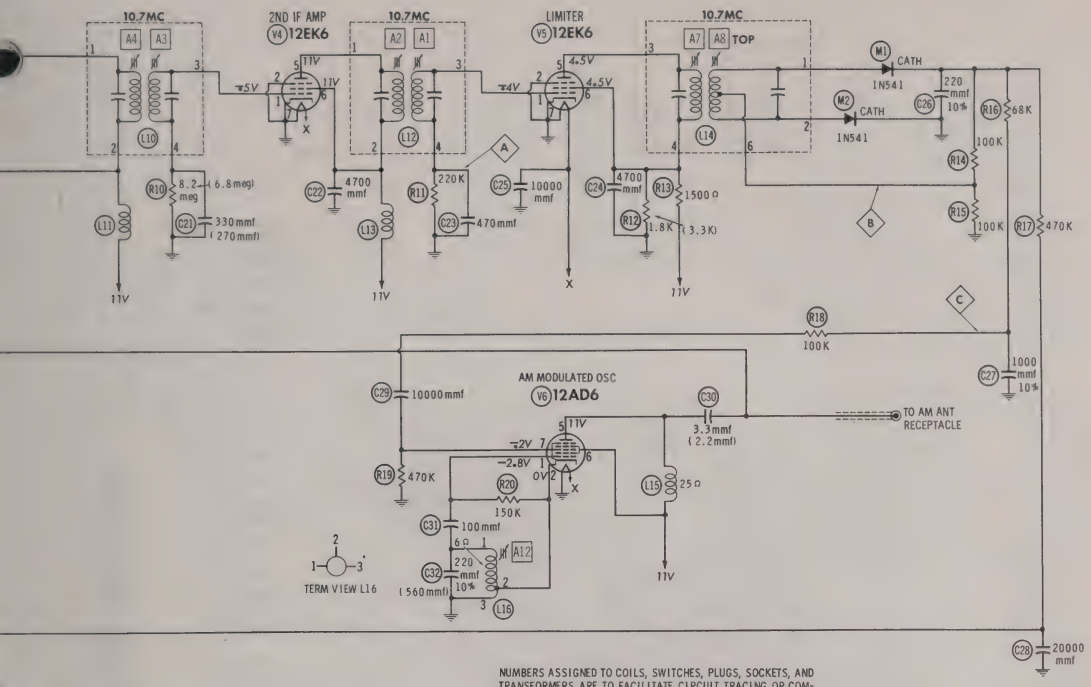
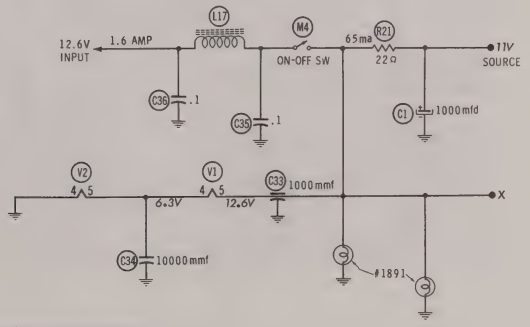


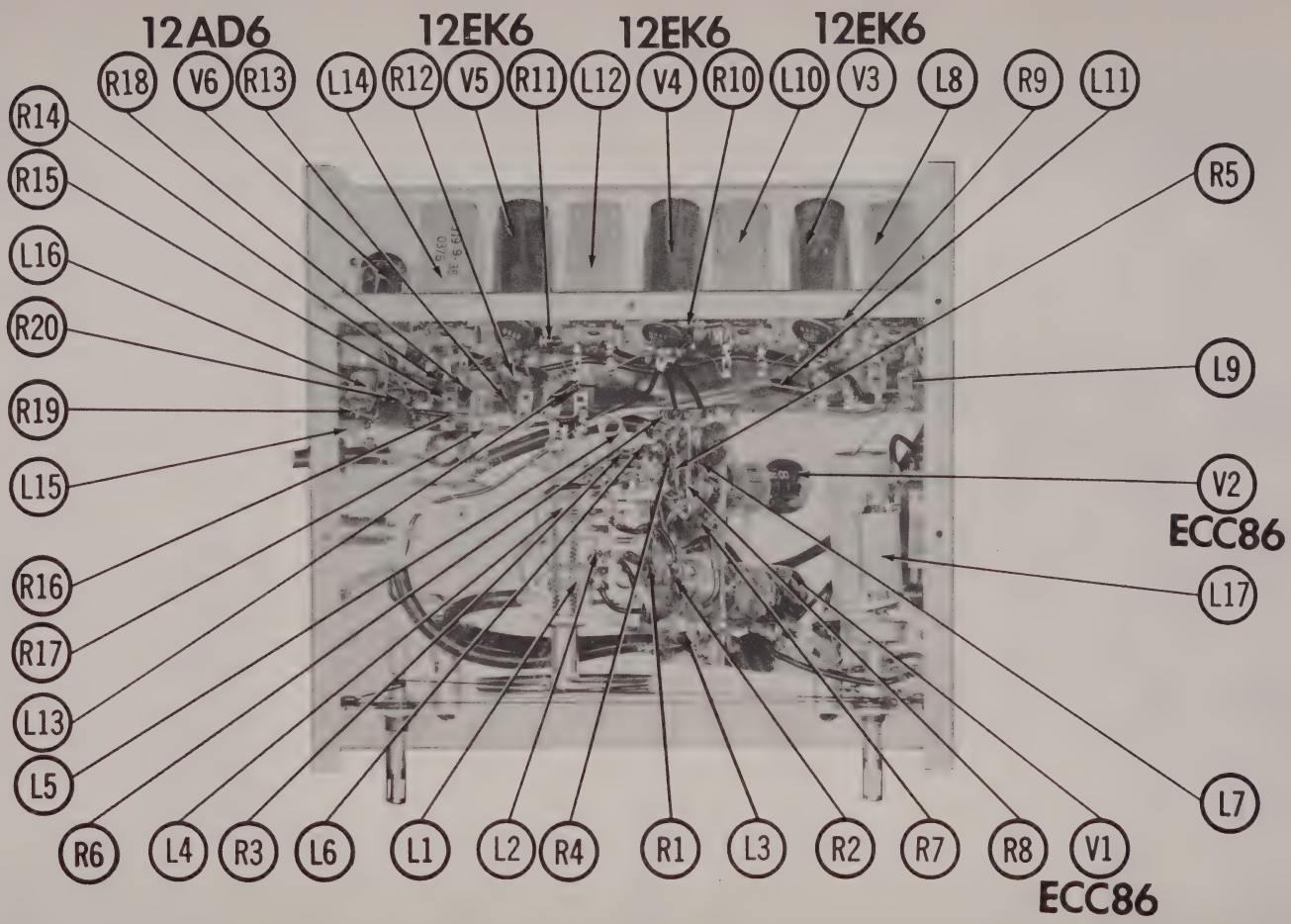
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.



1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

LAFAYETTE
MODEL SP-172 (FM-100)



CHASSIS TOP VIEW-INDUCTOR, RESISTOR & TUBE IDENT.

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661

TUBES

ITEM No.	USE	TYPE
V1	RF Amp. -Mixer	ECC86
V2	Osc. -AFC	ECC86
V3	1st IF Amplifier	12EK6
V4	2nd IF Amplifier	12EK6
V5	Limiter	12EK6
V6	AM Modulated Osc.	12AD6

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	LAFAYETTE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	1000	15		PRS1230	BR10001	TC1501	TD-1000-15	TVA-1163	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	56 NPO 10%		NPO-SI 56	TCZ-56	C10Q56C	CCTO-560	CNO-456	10TCC-Q56
C3	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C4	1.5 NPO		NPO-SI 1.5	TCZ-1R5	C10V15C		CNO-515	10TCC-V15
C5	47		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C6	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C7	2.2 NPO		NPO-DI 2.2	DTZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C8	1.5 N750							
C9	100		SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C10	4000		DI-4000	DD-402	BYA10D4	CCD-392	B-240	10TS-D40
C11	1000		EF-001	MFT-1000		CCF-102	CT280A	
C12	8 NPO ± 1mmf		NPO-SI 8.2		C10V8C			10TCC-V82
C13	8 NPO ± 1mmf		NPO-SI 8.2		C10V8C			10TCC-V82
C14								
C15	1000		EF-001	MFT-1000		CCF-102	CT280A	
C16	1000		EF-001	MFT-1000		CCF-102	CT280A	
C17	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C18	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C19	330		1468-00033		5R5T33	CM-19B-331M	MC241	1FM-333
C20	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C21	330		1468-00033		5R5T33	CM-19B-331M	MC241	1FM-333
C22	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C23	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C24	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C25	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C26	220 10%		NPO-SI 220	D6-221	L10T22	CCD-221	GP322	10TS-T22
C27	1000 10%		1469-001		5R5D1	CM-19B-102K	GP210	MS-21
C28	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C29	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C30	3.3		NPO-SI 3.3	TCZ-3R3	C10V33C	CCTO-3R3	CNO-533	10TCC-V33
C31	100		DI-100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C32	220 10%		1469-00022	DTZ-221	5R5T22	CM-19B-221K	CNO-322	MS-322
C33	1000		EF-001	MFT-1000		CCF-102	CT280A	
C34	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C35	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C36	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C37	1000		EF-001	MFT-1000		CCF-102	CT280A	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R1	150Ω				R11	220K			
R2	1meg			(2.2meg)*	R12	1800Ω			
R3	10K				R13	1500Ω			
R4	22Ω				R14	100K			
R5	150Ω				R15	100K			
R6	390K				R16	68K			
R7	22Ω				R17	470K			
R8	220Ω				R18	100K			
R9	8.2meg			(6.8meg)*	R19	470K			
R10	8.2meg			(6.8meg)*	R20	150K			
					R21	22Ω			

* Alternate Value.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		LAFAYETTE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Ant.						
L2	RF Choke						
L3	RF Choke (4.7uh)		SW-631	4609	RTC-8519	T819	
L4	RF						
L5	Osc.						
L6	RF Choke (1uh)		BC-561	4602	RTC-8515	T855	
L7	RF Choke (1uh)		BC-561	4602	RTC-8515	T855	
L8	1st IF		FM-254	1463	RTC-8599	T633	
L9	RF Choke (1uh)		BC-561	4602	RTC-8515	T855	
L10	2nd IF		FM-254	1463	RTC-8599	T633	
L11	RF Choke (1uh)		BC-561	4602	RTC-8515	T855	
L12	3rd IF		FM-254	1463	RTC-8599	T633	
L13	RF Choke (1uh)		BC-561	4602	RTC-8515	T855	
L14	Discriminator		FM-253	1464	RTC-8665	T634	
L15	RF Choke (1MH)		TV-208	4652	RTC-8532	T873	
L16	Osc.						
L17	Hash Choke (8.5MH)						

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		LAFAYETTE PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M1	1N541			1N295	1N295	Detector (Pigtail)
M2	1N541			1N295	1N295	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	LAFAYETTE PART No.	NOTES
M3	Tuning Cap.		FM, 2 Gang
M4	Switch		Function Selector (Includes Off-On, Rotary Type)

PHOTOFACT® Folder

REALISTIC
MODEL TRC-27 (94L595)

REALISTIC
MODEL TRC-27 (94L595)

REALISTIC
MODEL TRC-27 (94L595)

TRADE NAME	Realistic Model TRC-27 (94L595)
SUPPLIER	Radio Shack Corp., 730 Commonwealth Ave., Boston 17, Mass.
TYPE SET	AC-Battery Operated 10 Tube— 2 Transistor Single Channel Crystal Controlled Citizens Band Transmitter–Receiver
POWER SUPPLY	105 — 125 Volts AC, 60 Cycles (or) 12 Volt Storage Battery
RATING	50 Watts, .5 Amp. @117 Volts AC (Transmit); 42 Watts, .42 Amp. @117 Volts AC (Receive) (or) 5 Amp. @12.6 Volts DC (Transmit or Receive)
FREQ. RANGE	Any one of Citizens Band Channels 1 thru 22

NOTICE

ONLY THOSE PERSONS PROPERLY LICENSED BY FCC ARE PERMITTED TO MAKE CRYSTAL SUBSTITUTION OR EFFECT REPAIRS ON THE TRANSMITTER PORTION OF THIS UNIT.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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KZ599

SET 540 FOLDER 13

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1 thru A10, A12... GENERAL CEMENT #8721, 8722
WALSCO #2519
All..... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537

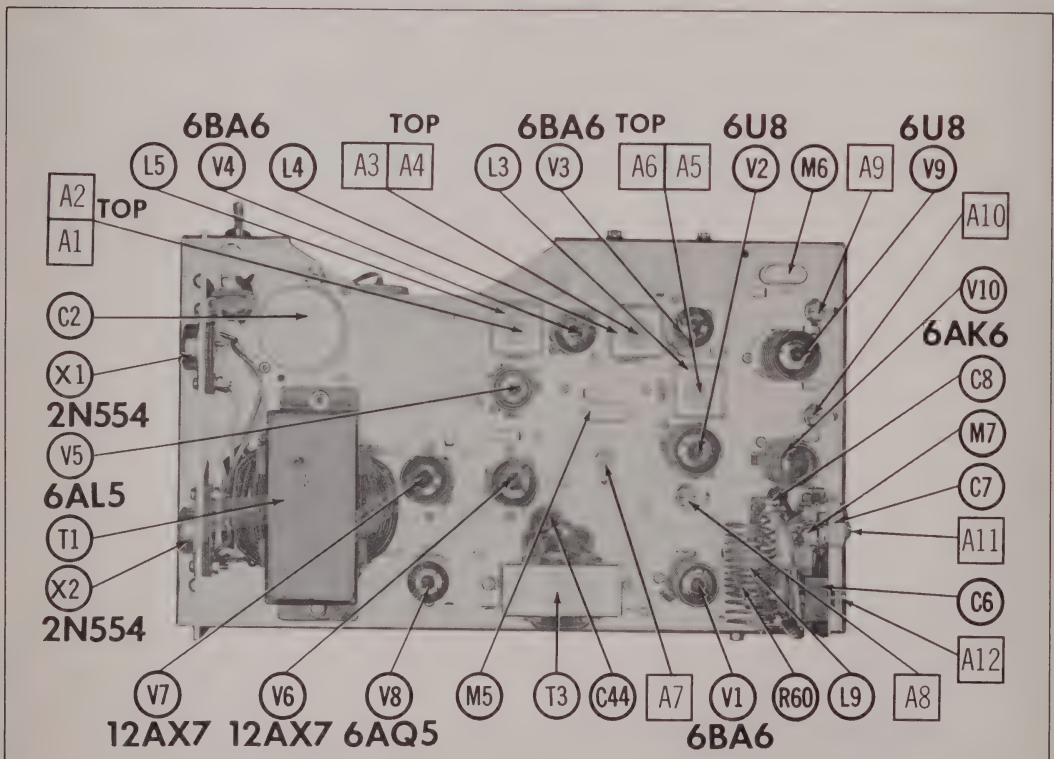
RECEIVER ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .01mfd to pin 2 (grid) of Mixer. Low side to chassis.	455KC (400% Mod.)		Across voice coil.	A1, A2, A3, A4, A5, A6	Adjust for maximum output.
2.	High side thru 50mmf to antenna input.	Frequency to be received.		"	A7, A8	"

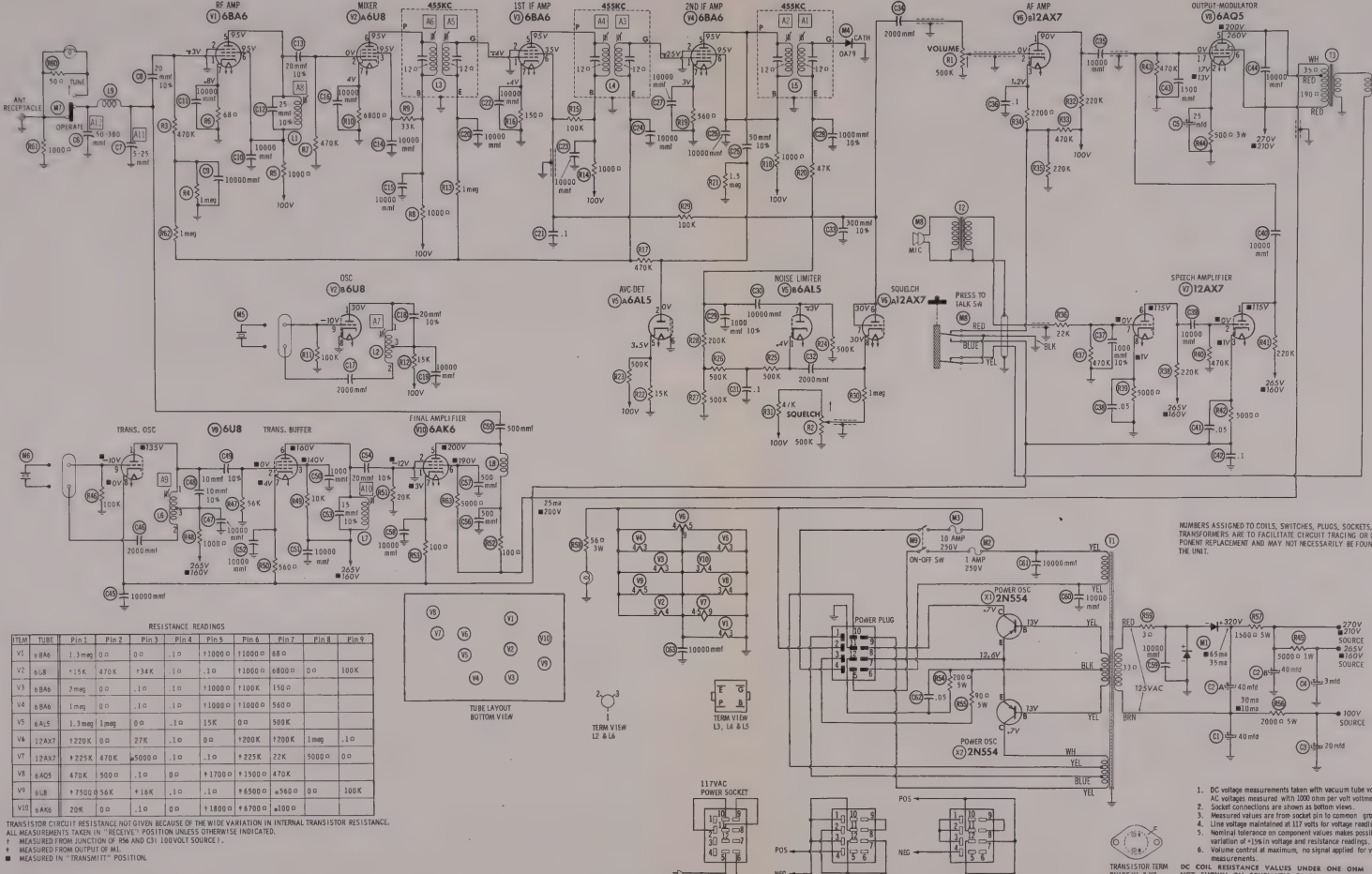
TRANSMITTER ALIGNMENT

3. Connect DC probe of VTVM to pin 1 (grid) of Final Amplifier. Common to chassis. Depress Transmit switch and adjust A9 and A10 for maximum deflection.
Push slide switch to Tune Position.
Press Transmit switch and adjust A11 and A12 for maximum bulb brilliance.
Repeat adjustment of A11 and A12.

NOTE: To check plate power input to final amplifier, measure voltage drop across R52 (approximately 2V) and from R52 to chassis (approximately 215V). Multiply the 2 voltages and divide by 100. At no time should this exceed 5 watts.



CHASSIS—TOP VIEW



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BA6	1.3meg	0Ω	0Ω	.1Ω	†1000Ω	†1000Ω	68Ω		
V2	6U8	†15K	470K	†34K	.1Ω	.1Ω	†1000Ω	6800Ω	0Ω	100K
V3	6BA6	2meg	0Ω	.1Ω	.1Ω	†1000Ω	†100K	150Ω		
V4	6BA6	1meg	0Ω	.1Ω	.1Ω	†1000Ω	†1000Ω	560Ω		
V5	6AL5	1.3meg	1meg	0Ω	.1Ω	15K	0Ω	500K		
V6	12AX7	†220K	0Ω	27K	.1Ω	0Ω	†200K	†200K	1meg	.1Ω
V7	12AX7	†225K	470K	■5000Ω	.1Ω	.1Ω	†225K	22K	5000Ω	0Ω
V8	6AQ5	470K	500Ω	.1Ω	0Ω	†1700Ω	†1500Ω	470K		
V9	6U8	†7500Ω	56K	†16K	.1Ω	.1Ω	†6500Ω	■560Ω	0Ω	100K
V10	6AK6	20K	0Ω	.1Ω	0Ω	†1800Ω	†6700Ω	■100Ω		

TRANSISTOR CIRCUIT RESISTANCE NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.
ALL MEASUREMENTS TAKEN IN "RECEIVE" POSITION UNLESS OTHERWISE INDICATED.
† MEASURED FROM JUNCTION OF R36 AND C31 100VOLT SOURCE).
■ MEASURED FROM OUTPUT OF M1.
■ MEASURED IN "TRANSMITT" POSITION.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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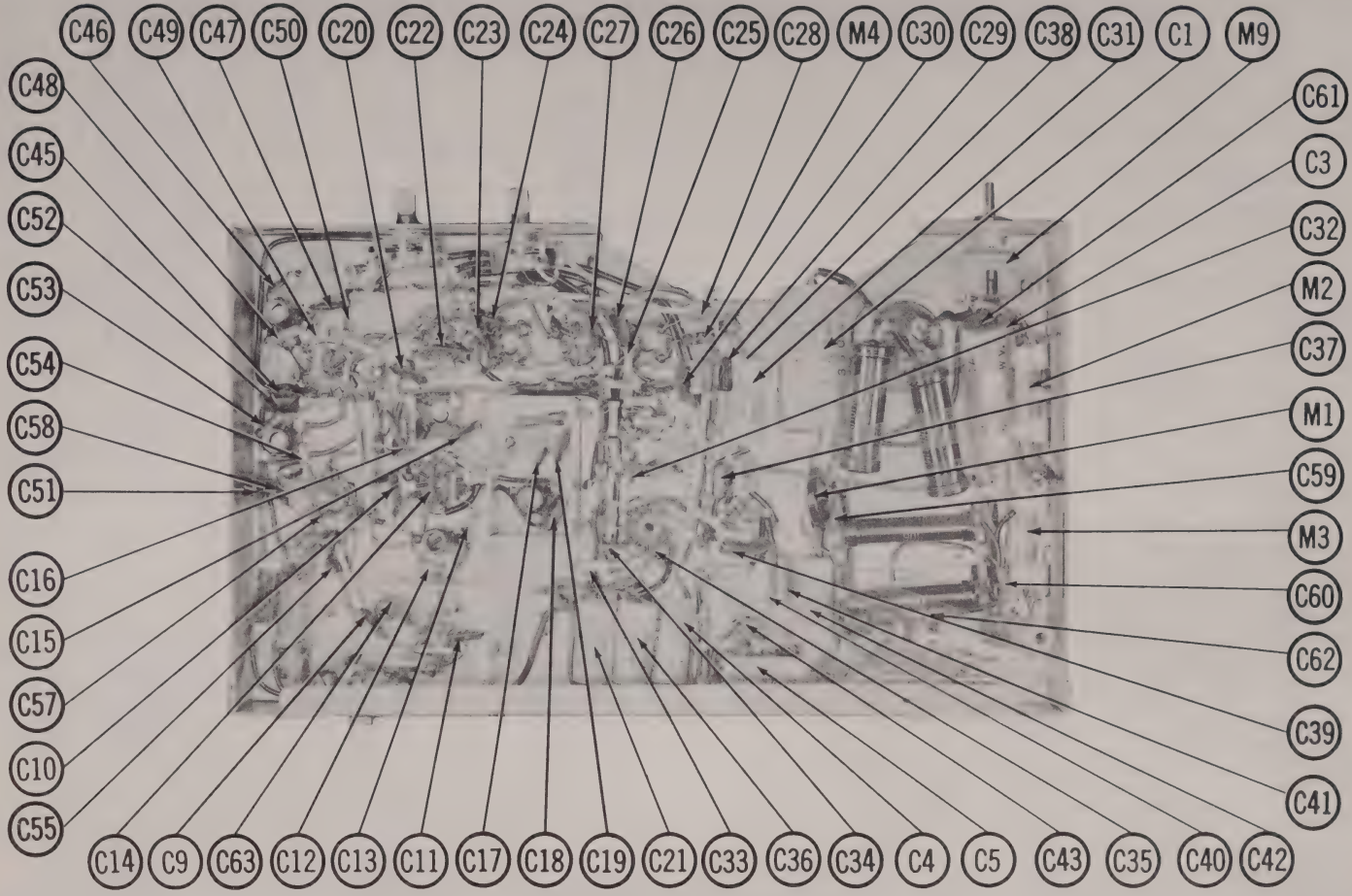
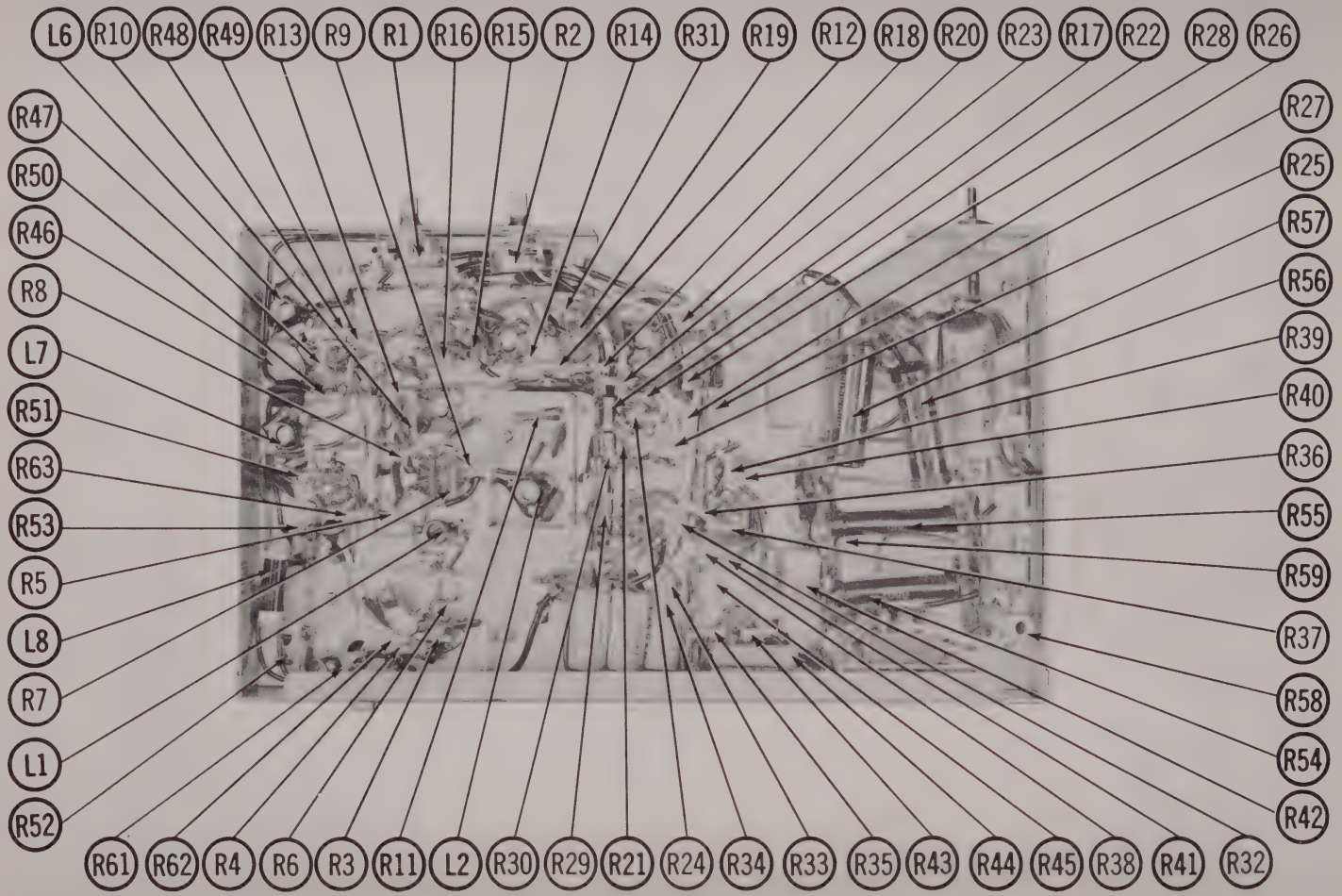
REALISTIC
MODEL TRC-27 (94L595)



CHASSIS BOTTOM VIEW-CAPACITOR & MISC. IDENT.

REALISTIC
MODEL TRC-27(94L595)



CHASSIS BOTTOM VIEW-RESISTOR & INDUCTOR IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC •			RAYTHEON •		SYLVANIA •	
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amplifier	6BA6	V6	Squelch - AF Amp.	12AX7
V2	Mixer-Osc.	6U8	V7	Speech Amplifier	12AX7
V3	1st IF Amplifier	6BA6	V8	Output-Modulator	6AQ5
V4	2nd IF Amplifier	6BA6	V9	Trans. Osc. -Buffer	6U8
V5	AVC Det. -Noise Limiter	6AL5	V10	Final Amplifier	6AK6

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N554	Power Osc.				PNP
X2	2N554	Power Osc.				PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	REALISTIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	40	350		PRS1670	BR4035	TC78	TD-40-350	TVA-1611	
C2A	②40	450		AFH2-57	B0450	FP238	TMD-2650	TVL-2764	
B	①40	450							
C3	20	350		PRS1735	BR2035	TC65	TD-20-350	TVA-1608	
C4	3	350		PRS1600	BR435	TC697	TD-4-450	TVA-1601	
C5	25	25		PRS1260	BBR25-25	TC26	TD-25-25	TVA-1205	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	50-380					465		
C7	5-25					461		
C8	20 10%		NPO-SI 20	D6-200	L10Q2	CCD-200	GP420	10TS-Q20
C9	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C10	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C11	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C12	25 10%		NPO-SI 25	TCZ-25	C10Q25C	CCTO-240	CNO-425	10TCC-Q25
C13	20 10%		NPO-SI 20	D6-200	L10Q2	CCD-250	GP420	10TS-Q20
C14	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C15	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C16	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C17	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	10TS-Q20
C18	20 10%		1469-00002	TCZ-20	22R5Q2	CM-19B-200K	CNO-422	MS-42
C19	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C20	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C21	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C22	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C23	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C24	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C25	50 10%		NPO-SI 50	TCZ-50	L10Q5	CCD-500	GP450	10TS-Q50
C26	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C27	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C28	1000 10%		1469-001		5R5D1	CM-19B-102K	MCB255	MS-21
C29	1000 10%		1469-001		5R5D1	CM-19B-102K	MCB255	MS-21
C30	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C31	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C32	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C33	300 10%			TCZ-300	L10T3	CCD-301	GP330	10TS-T30
C34	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C35	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C36	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C37	1000 10%		1469-001		5R5D1	CM-19B-102K	MCB255	MS-21

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C38	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C39	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C40	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C41	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C42	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C43	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C44	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C45	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C46	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C47	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C48	10 10%		1469-00001	TCZ-10	22R5Q1	CM-19B-100K	MCB215	MS-41
C49	10 10%		NPO-SI 10	D6-100	L10Q1	CCD-100	GP410	10TS-Q10
C50	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C51	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C52	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C53	15 10%		1469-000015	TCZ-15	22R5Q15	CM-19B-150K	CNO-415	MS-415
C54	20 10%		NPO-SI 20	TCZ-20	L10Q2	CCD-200	GP420	10TS-Q20
C55	500		BPD-0005	DD-501	BYA10T5	CCD-501	GP350	10TS-T50
C56	500		BPD-0005	DD-501	BYA10T5	CCD-501	GP350	10TS-T50
C57	500		BPD-0005	DD-501	BYA10T5	CCD-501	GP350	10TS-T50
C58	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C59	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C60	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C61	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C62	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C63	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	REALISTIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	500K	½		B-60	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	500K	½		B-59	A47-500K-S	Q11-13 3	U50	Squelch
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	470K				R26	500K			
R4	1meg				R27	500K			
R5	1000Ω				R28	200K			
R6	68Ω				R29	100K			
R7	470K				R30	1meg			
R8	1000Ω				R31	47K			
R9	33K				R32	220K			
R10	6800Ω				R33	470K			
R11	100K				R34	2200Ω			
R12	15K				R35	220K			
R13	1meg				R36	22K			
R14	1000Ω				R37	470K			
R15	100K				R38	220K			
R16	150Ω				R39	5000Ω			
R17	470K				R40	470K			
R18	1000Ω				R41	220K			
R19	560Ω				R42	5000Ω			
R20	47K				R43	470K			
R21	1.5meg				R44	500Ω 3W	PW5-500	5W-SQ-500	
R22	15K				R45	5000Ω 1W			
R23	500K				R46	100K			
R24	500K				R47	56K			
R25	500K				R48	1000Ω			

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R49	10K			
R50	560Ω			
R51	20K			
R52	100Ω			
R53	100Ω			
R54	200Ω 5W	PW5-200	5W-SQ-200	
R55	90Ω 5W	PW5-90	5W-SQ-90	
R56	2000Ω 5W	PW5-2000	5W-SQ-2000	

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R57	1500Ω 5W	PW5-1500	5W-SQ-1500	
R58	56Ω 3W	PW5-56	5W-SQ-56	
R59	3Ω			
R60	50Ω			
R61	1000Ω			
R62	1meg			
R63	5000Ω			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		REALISTIC PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	RF						
L2	Osc. Plate						
L3	1st IF						
L4	2nd IF						
L5	3rd IF						
L6	Osc. Plate						
L7	Buffer Plate						
L8	RF Choke						
L9	Ant. Loading						

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	INPUT	SEC. 1	SEC. 2	REALISTIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V @ .5A (or) 12.6VCT @ 3.6A	125V @ .230A AC	12.6VCT @ 1.8A (AC Only)						

TRANSFORMER (MIC.)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	REALISTIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	1	18						Part of M8
	IMP.	IMP.						
	40Ω	50K						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	REALISTIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T3	7000Ω Tap @ 5000Ω	3-4Ω			A-3817 ①			① Drill New Mounting Hole (s).

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	REALISTIC PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω		4A07	

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	REALISTIC PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.065A					Dual Selenium

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			REALISTIC PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2 M3		1A 250V 10A 250V						

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		REALISTIC PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M4	OA79			1N295	1N295	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	REALISTIC PART No.	NOTES
M5	Crystal		Receive
M6	Crystal		Transmit
M7	Switch		Operate-Tune (SPDT Slide Type)
M8	Microphone Assy.		Includes Press-to-talk Switch and T2
M9	Switch		Power Off-On (Toggle)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder with CIRCUITRACE®

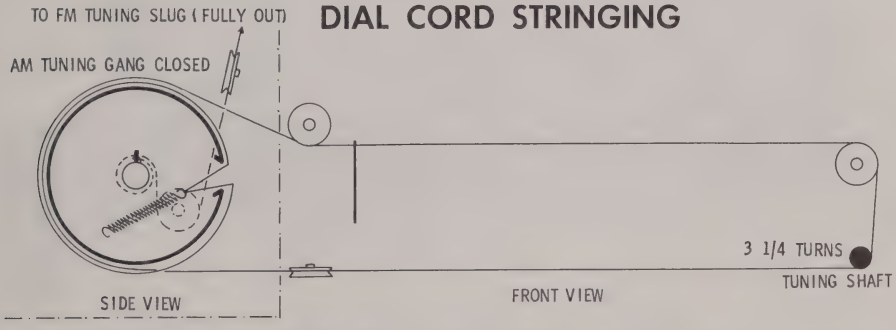
SILVERTONE MODELS 1023, 1024 (Ch. 132.60501, 132.60502)

SILVERTONE MODELS 1023, 1024 (Ch. 132.60501, 132.60502)

MODEL 1023

TRADE NAME	Silvertone Models 1023, 1024 (Ch. 132.60501, 132.60502)		
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois		
TYPE SET	AC-DC Operated 6 Tube FM-AM Receiver		
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles	RATING	38 Watts, .36 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540 – 1620KC	FREQ. MOD.	88 – 108MC

DIAL CORD STRINGING



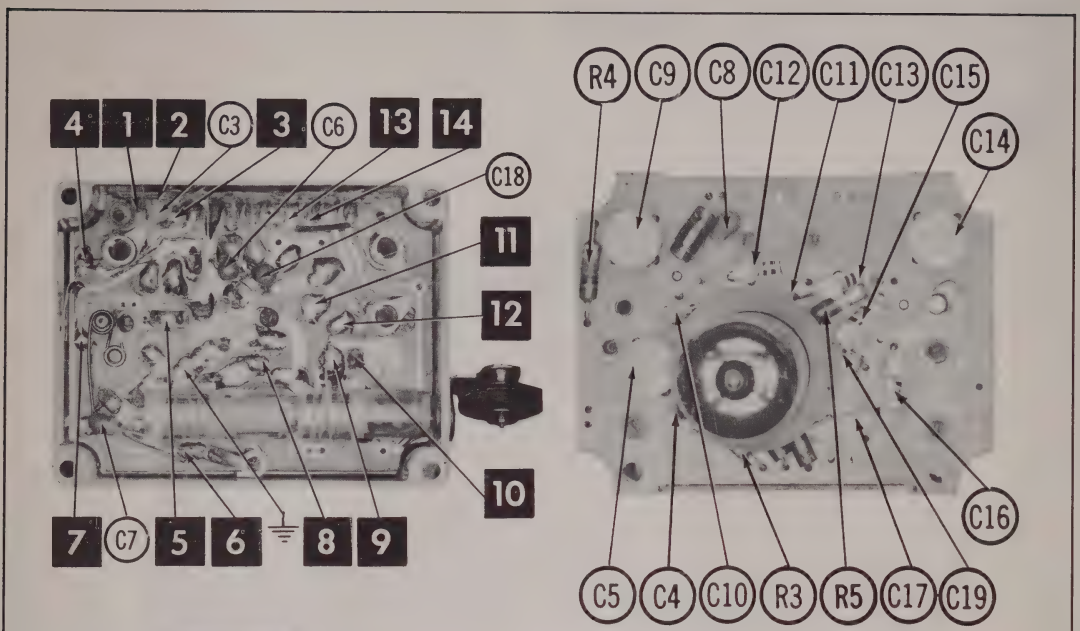
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

KK565

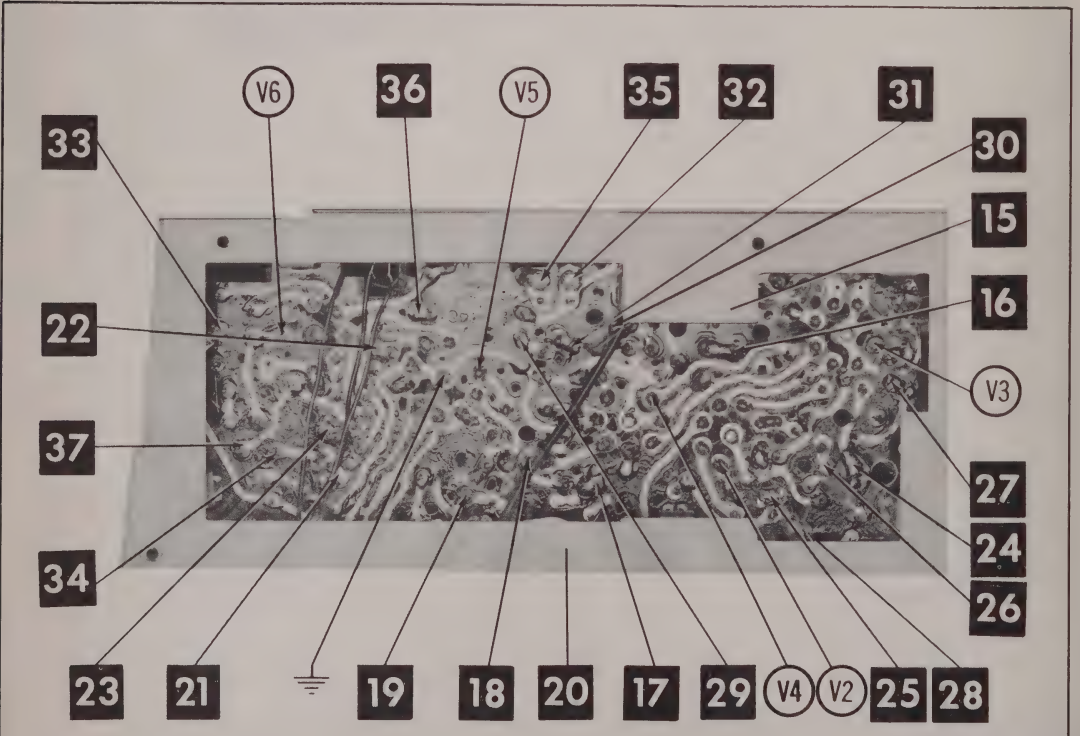
DATE 7–61 SET 540 FOLDER 14

SET 540 FOLDER 14



A Howard W. Sams CIRCUITRACE® Photo

FM RF SUBCHASSIS



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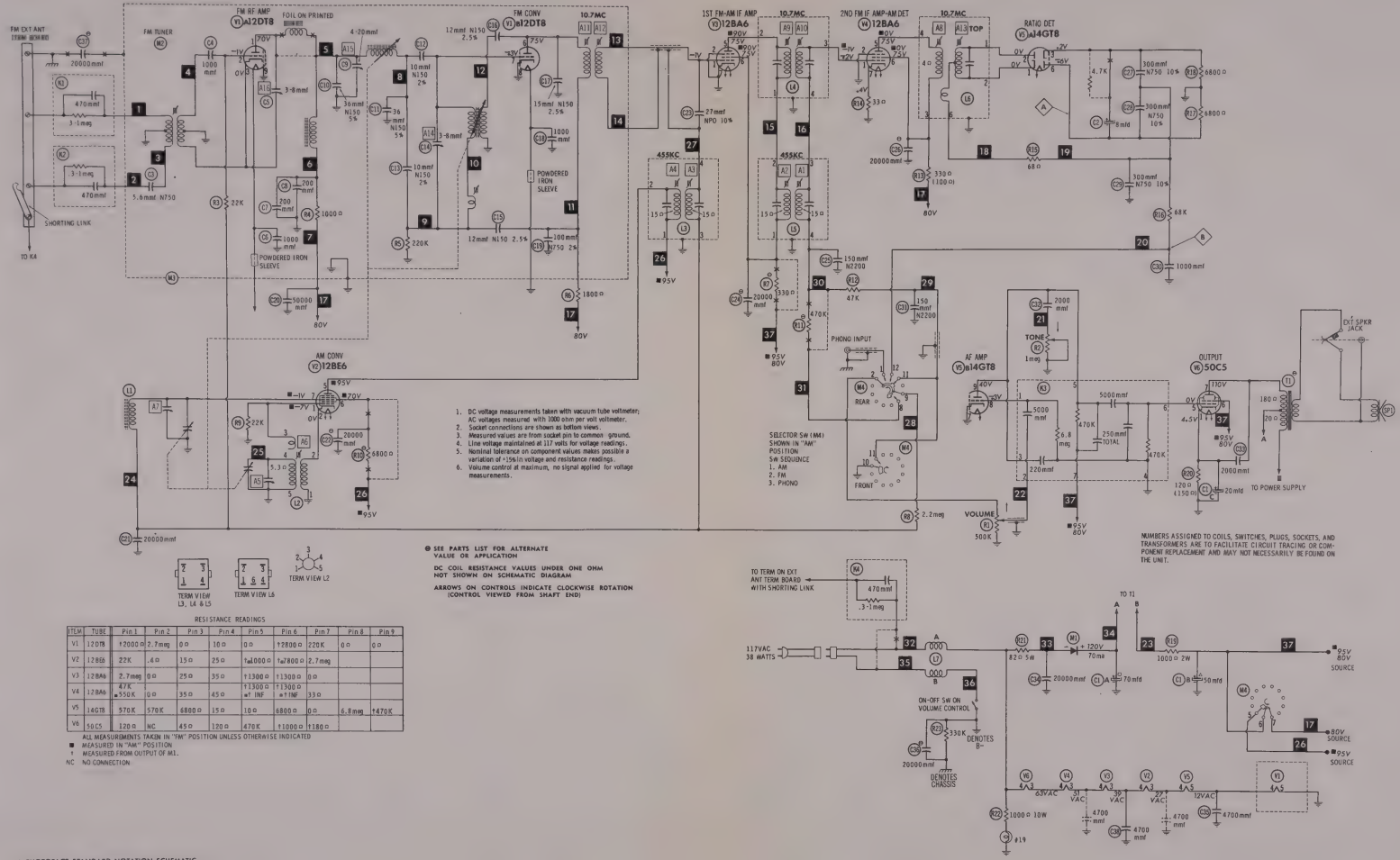
PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DT8	†2000Ω	2.7meg	0Ω	10Ω	0Ω	†2800Ω	220K	0Ω	0Ω
V2	12BE6	22K	.4Ω	15Ω	25Ω	†≈1000Ω	†≈7800Ω	2.7meg		
V3	12BA6	2.7meg	0Ω	25Ω	35Ω	†1300Ω	†1300Ω	0Ω		
V4	12BA6	47K ●550K	0Ω	35Ω	45Ω	†1300Ω ≠† INF	†1300Ω ≠† INF	33Ω		
V5	A14GT8	570K	570K	6800Ω	15Ω	10Ω	6800Ω	0Ω	6.8meg	†470K
V6	50C5	120Ω	NC	45Ω	120Ω	470K	†1000Ω	†180Ω		

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE INDICATED

■ MEASURED IN "AM" POSITION

† MEASURED FROM OUTPUT OF M1.

NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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SILVERTONE MODELS 1023, 1024 (Ch. 132.60501, 132.60502)

CHASSIS-TOP VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:

A1 thru A4, A6, A8, A9, A10, A13	GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440 WALSCO #2526, 2543, 2544, 2545
A5, A7	GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520
A11, A12	GENERAL CEMENT #9440
A14, A15	GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089 WALSCO #2512, 2525, 2528

AM ALIGNMENT — SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .05mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400~ 30% AM)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Loop	1670KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	600KC	600KC	"	A6	"
4.	"	1400KC	1400KC Signal.	"	A7	Adjust for maximum output. Repeat Steps 2, 3 and 4.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	Across FM antenna terminals.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point Ⓐ. Common to chassis.	A8, A9, A10, A11, A12	Adjust for maximum deflection.
6.	"	"	"	DC probe to point Ⓑ. Common to chassis.	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE —SELECTOR IN FM POSITION

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	Across FM antenna terminals.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point Ⓐ. Low side to chassis.	A8, A9, A10, A11, A12	Disconnect Stabilizing Capacitor C2. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C2.
6.	"	"	"	Vert. amp. to point Ⓑ. Low side to chassis.	A13	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A8 for maximum amplitude and straightness of cross-over lines.

FM RF ALIGNMENT — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Across FM antenna terminals with 150Ω in each lead.	108.5MC (Unmod.)	(FM) High end stop.	DC probe to point Ⓐ. Common to chassis.	Idler Tension Screw, and A14	Adjust for maximum deflection.
8.	"	100MC	100MC	"		Retouch Idler Tension screw for maximum deflection.
9.	"	100MC	"	"	A15	Adjust for maximum deflection.
10	Disconnect generator and tune receiver to low frequency end of dial. If oscillation occurs, adjust A16 enough to stop oscillation then repeat steps 7, 8 and 9					

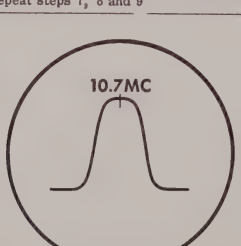


FIG. 1

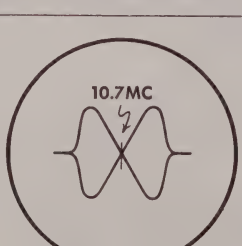


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amp. -FM Conv.	12DT8	V4	2nd FM IF Amp. -AM Det.	12BA6
V2	AM Converter	12BE6	V5	Ratio Det. -AF Amp.	14GT8
V3	1st FM-AM IF Amp.	12BA6	V6	Output	50C5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■70	150	43711-14	PWH3-81-50	C0610 ‡	PFP311.12	TMT-3097 †	PCL-3431.1	
B	▲50	150							
C	20	25							
C2	8	25	45238-3	BCD25008	ECPB607	TT25X8	TD-8-150	VL-1206	

‡ Use Printed Circuit Adapters #55277 & 55278.
† Use Printed Circuit Adapter Kit TMA.

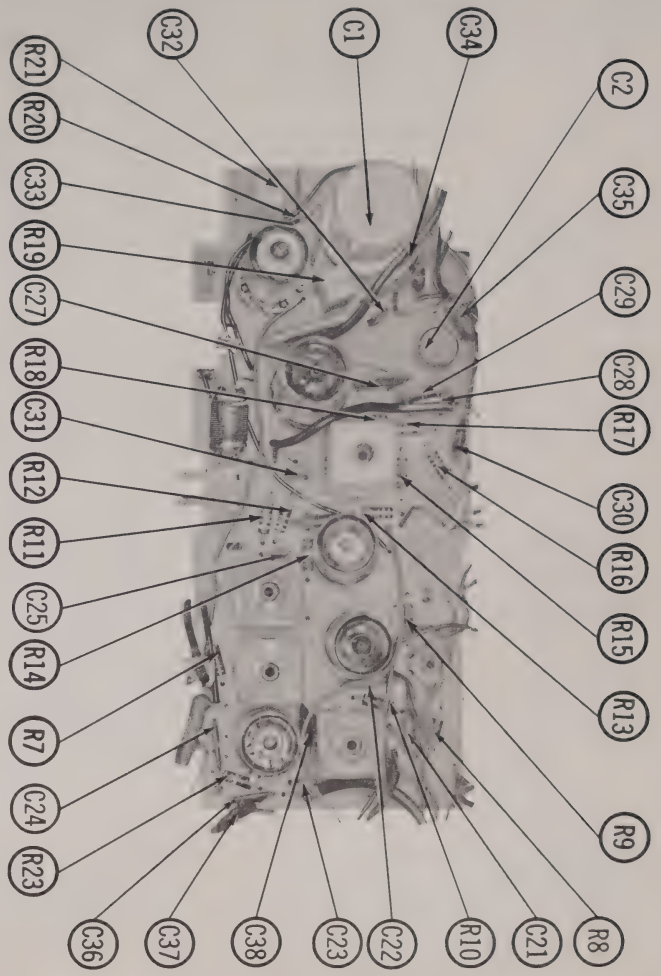
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	5.6 N750				C10V6U			
C4	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C5	3-8							
C6	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C7	200		DI-200	DD-201	L10T2	CCD-201	GP320	10TS-T20
C8	200		DI-200	DD-201	L10T2	CCD-201	GP320	10TS-T20
C9	4-20							
C10	36 N150 5%					*		
C11	36 N150 5%					*		
C12	10 N150 2%					*		
C13	10 N150 2%					*		
C14	3-8							
C15	12 N150 2.5%					*		
C16	12 N150 2.5%					*		
C17	15 N150 2.5%							
C18	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C19	100 N750 2%			TCN-100		*		
C20	50000		BPD-05	DD-503	CUB6S5	6DP-3-503	GP150	5HK-S50
C21	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C22	20000	Note 1	BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C23	27 NPO 10%		NPO-DI 25	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C24	20000	Note 2	BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C25	150 N2200					*		
C26	20000	Note 2	BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C27	300 N750 10%		N750-DI 330	TCN-300	C10T3U	CCTN-301	CN7-333	10TCU-T33
C28	300 N750 10%		N750-DI 330	DTN-300	C10T3U	CCTN-301	CN7-333	10TCU-T33
C29	300 N750 10%		N750-DI 330	TCN-300	C10T3U	CCTN-301	CN7-333	10TCU-T33
C30	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C31	150 N2200					*		
C32	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C33	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C34	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C35	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C36	20000	Note 2	BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C37	20000	Note 1	BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C38	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Note 1. Not used in Chassis 132.60502.
Note 2. Chassis 132.60502 uses 4700mmf in this application.

PRINTED BOARD—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	500K	½	47500-20	BPL-60	C47S-500K-Z	B13-133 *	PP55A	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			Not Req.	Not Req.	SK7 *	Not Req.	Push-Pull Off-On
R2A	1meg	½	47500-19	B-70	A47-1meg-Z	Q13-137	U53	Tone
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

* Factory Assembled Part #PPQ13-133 (SK7).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	22K				R14	33Ω			
R4	1000Ω				R15	68Ω			
R5	220K				R16	68K			
R6	1800Ω				R17	6800Ω			
R7	330Ω			Note 1	R18	6800Ω			
R8	2.2meg				R19	1000Ω 2W			
R9	22K				R20	120Ω			(150Ω) *
R10	6800Ω			Note 1	R21	82Ω 5W	PW5-82	5W-SQ-82	
R11	470K			Note 2	R22	1000Ω 10W	PW10-1000	10W-SQ-1000	
R12	47K				R23	330K			
R13	330Ω			(100Ω) †					

Note 1. Not used in Chassis 132.60502.
Note 2. Not used in some versions.
* Alternate Value.
† Used in Chassis 528.60502.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SILVERTONE PART No.	REPLACEMENT DATA	
K1	Antenna Filter	470mmf, .3-1meg	47796-2	Centralab Sprague	RC-471 AC1-1
K2	Antenna Filter	470mmf, .3-1meg	47796-2	Centralab Sprague	RC-471 AC1-1
K3	Audio Coupling	220mmf, 250mmf, (2) 5000mmf, (2) 470K, 6.8meg	43743-2	Aerovox Centralab Sprague	PA-512-3 PC-158 DT-5
K4	Antenna Filter	470mmf, .3-1meg	47796-2	Centralab Sprague	RC-471 AC1-1

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		SILVERTONE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick	46568-9	BC-419	705-A		T532	
L2	AM Osc.	43644-1					
L3	1st AM IF	44282-1	BC-356	13-PC9	RTC-8683	T614	
L4	2nd FM IF	46971-4	FM-256	1463-PC	RTC-9046	T654	
L5	3rd AM IF	44282-1	BC-357	13-PC10	RTC-8684	T615	
L6	Ratio Detector	45240-3					
L7A	Line Choke (3.3uh)	24308-2	BC-564	4608	RTC-8518	T858	
B	Line Choke (3.3uh)		BC-564	4608	RTC-8518	T858	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	SILVERTONE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3100Ω Tap ② 10%	3-4Ω	43393-4 ①	A-3031	A-3336	24S89	S-16X ②	① Part #43393-5 used in some versions. ② Drill New Mounting Hole(s).

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	QUAM PART No.	
SP1	5" x 7"	PM	3-4Ω	46130-2	57A15	

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	SILVERTONE PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.070A	47126-1	1N1763	2F4	SR200	

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M2	FM Tuner	46969-3	
M3	Tuning Cap.	49119	2 Gang (AM)
M4	Switch	46165-4	Function Selector, (Rotary Type)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Crystal	49105	
Dial Pointer	49198-1	
Knob	49193	
Cabinet	49102-48	Back, Brown, Model 1023
Cabinet	49102-67	Back, Ivory, Model 1024

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type) ..... Use BELDEN No. 8874

PHOTOFACT® Folder with CIRCUITRACE®

SONY MODEL TR-810

SONY MODEL TR-810

SONY MODEL TR-810

TRADE NAME	Sony Model TR-810		
IMPORTER	Sony Corp. of America, 514 Broadway, New York 12, N. Y.		
TYPE SET	Battery Operated Transistorized Portable AM Receiver		
POWER SUPPLY	9 Volts DC	RATING	8MA @ 9 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	535 – 1605KC		15MA @ 9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:- A1, A2, A3.....GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538
A4, A7.....GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528
A5.....GENERAL CEMENT #9440

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1600KC	1600KC	"	A4	"
3.	"	600KC	600KC	"	A5, A6	"
4.	"	1400KC	1400KC Signal.	"	A7	Adjust for maximum output. Repeat Steps 2 thru 4.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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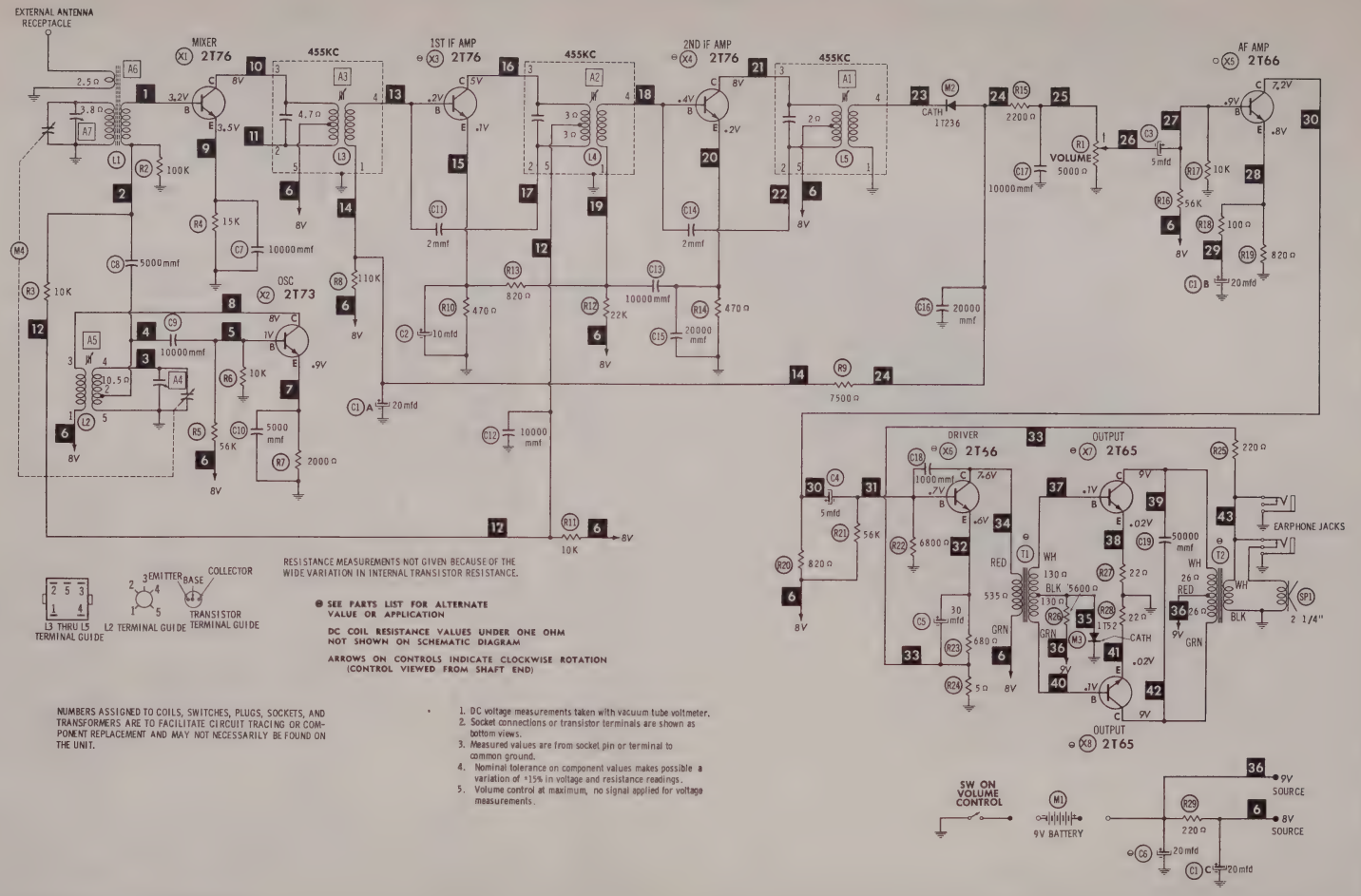
KF438

SET 540 FOLDER 15


EXTERNAL ANTENNA RECEPTACLE
MIXER X1 2T76
455KC
1ST IF AMP X3 2T76
455KC
2ND IF AMP X4 2T76
455KC
AF AMP X5 2T66
OSC X2 2T73
DRIVER X6 2T66
OUTPUT X7 2T65
OUTPUT X8 2T65
CATH 1T236
VOLUME 5000Ω
EARPHONE JACKS
SW ON VOLUME CONTROL
9V BATTERY
9V SOURCE
8V SOURCE
L1 L2 L3 L4 L5
T1 T2
SP1
M1 M2 M3
R1 R2 R3 R4 R5 R6 R7 R8 R9 R10 R11 R12 R13 R14 R15 R16 R17 R18 R19 R20 R21 R22 R23 R24 R25 R26 R27 R28 R29
C1 C2 C3 C4 C5 C6 C7 C8 C9 C10 C11 C12 C13 C14 C15 C16 C17 C18 C19
L3 THRU L5 TERMINAL GUIDE
L2 TERMINAL GUIDE
TRANSISTOR TERMINAL GUIDE
EMITTER
BASE
COLLECTOR

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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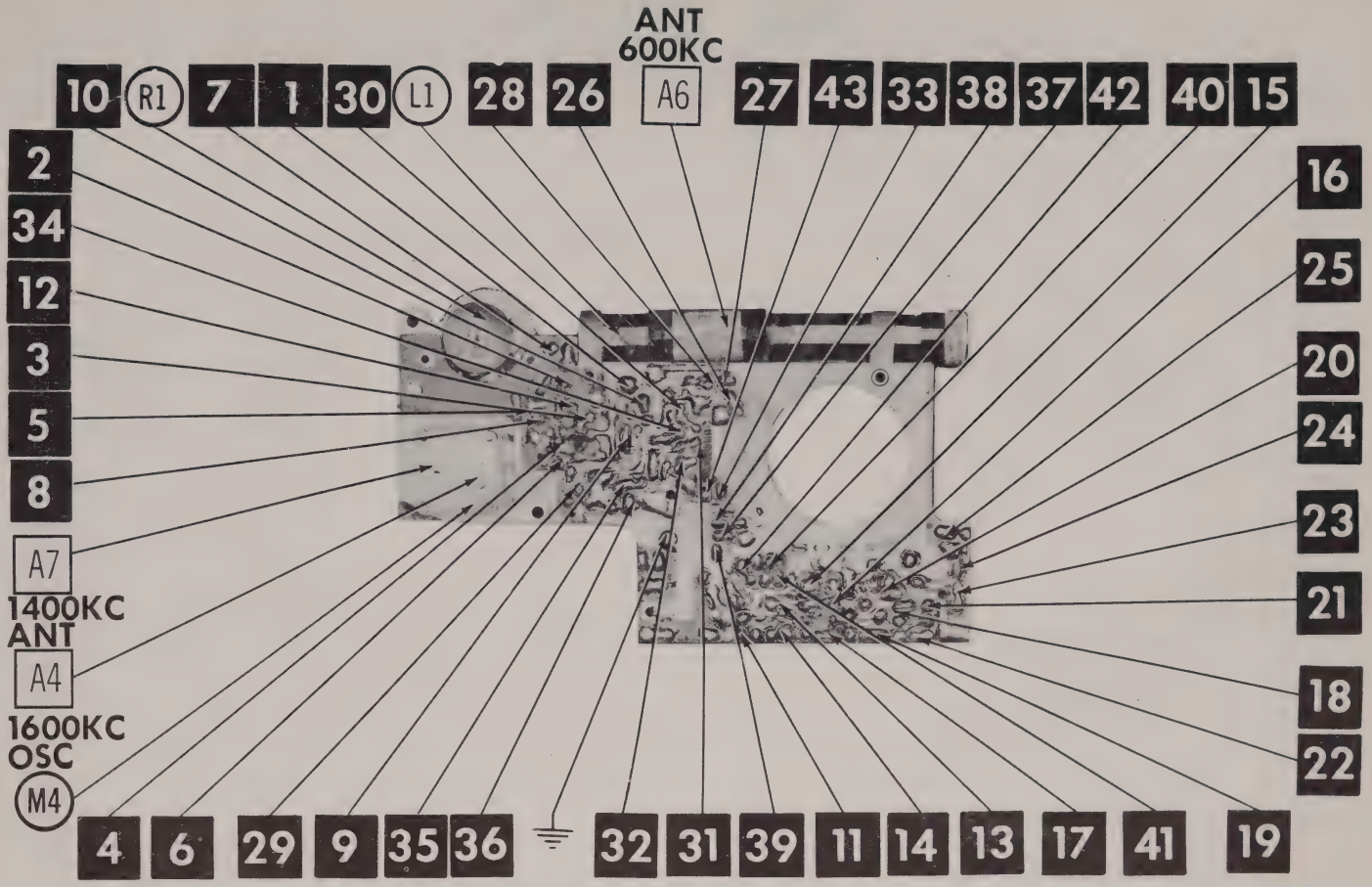
SONY MODEL TR-810



A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2T76	Mixer				NPN
X2	2T73	Oscillator			2N212	NPN
X3	2T76	1st IF Amplifier				NPN
	2T750 *	1st IF Amplifier				
X4	2T76	2nd IF Amplifier				NPN
	2T767 *	2nd IF Amplifier				
X5	2T66	AF Amplifier	2N649		2N214	NPN
	2T64 *	AF Amplifier				
X6	2T66	Driver	2N649		2N214	NPN
	2T65 *	Driver			2N214	
X7	2T65	Output	2N649		2N214	NPN
	2T66 *	Output			2N214	
X8	2T65	Output	2N649		2N214	NPN
	2T66 *	Output			2N214	

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	SONY PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	20	10							
B	20	10							
C	20	10							
C2	10	3		PTT-3010	NLW10-6	TT3X10	MLV10-3	TE-1053	
C3	5	6		PTT-6005	NLW5-15	TT6X5	MLV5-6	TE-1084	
C4	5	6		PTT-6005	NLW5-15	TT6X5	MLV5-6	TE-1084	
C5	30	3		PTT-3030	NLW30-6	TT6X30	MLV30-6	TE-1092	
C6	20	10		PTT-10020	NLW20-15	TT15X20	MLV20-12	TE-1130	Note 1

Note 1. Some versions may use 12mfd@15V or 10mfd@10V in this application.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C7	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C8	5000		C80V502AM	DM-502	H-05D5	CCD-502	TA-250	TG-D50
C9	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C10	5000		C80V502AM	DM-502	H-05D5	CCD-502	TA-250	TG-D50
C11	2		NPO-DI 2.0	DTZ-2R2	C10V2C	CCTO-2R2	CNO-522	10TCC-V22
C12	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C13	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C14	2		NPO-DI 2.0	DTZ-2R2	C10V2C	CCTO-2R2	CNO-522	10TCC-V22

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C15	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20
C16	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20
C17	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C18	1000		C80V102AM	DM-102	H-05D1	CCD-102	B-210	5HK-D10
C19	50000		C80V503AM	DA-503	H-05S5		TA-150	TG-S50

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SONY PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/10		B16-214				Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	100K				R16	56K			
R3	10K				R17	10K			
R4	15K				R18	100Ω			
R5	56K				R19	820Ω			
R6	10K				R20	820Ω			
R7	2000Ω				R21	56K			
R8	110K				R22	6800Ω			
R9	7500Ω				R23	680Ω			
R10	470Ω				R24	5.0Ω			
R11	10K				R25	220Ω			
R12	22K				R26	5600Ω			
R13	820Ω				R27	22Ω			
R14	470Ω				R28	22Ω			
R15	2200Ω				R29	220Ω			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		SONY PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick	LA-032-1K					
L2	Osc.	LO-030-AQ					
L3	1st IF	LI-008-AP					
L4	2nd IF	LI-008-BP					
L5	3rd IF	LI-008-CP					

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	SONY PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.4	1	TI-002 ①					① Alternate Part #TI-002-03

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	SONY PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	1200Ω CT	6-8Ω	TX-002 ①					① Alternate Part #TX-002-03

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SONY PART No.	QUAM PART No.	
SP1	2 1/4"	PM	6-8Ω			

BATTERIES

ITEM No.	VOLTAGE	SONY	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
		PART No.	"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V	BL-006P		2U6		216		M-1604	

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		SONY PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2 M3	1T236 1T52			1N60	1N60	Detector (Pigtail) Output Bias Regulator

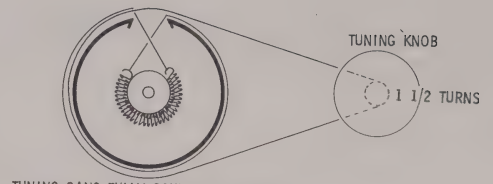
MISCELLANEOUS

ITEM No.	PART NAME	SONY PART No.	NOTES
M4	Tuning Cap.	PVC-2X	2 Gang

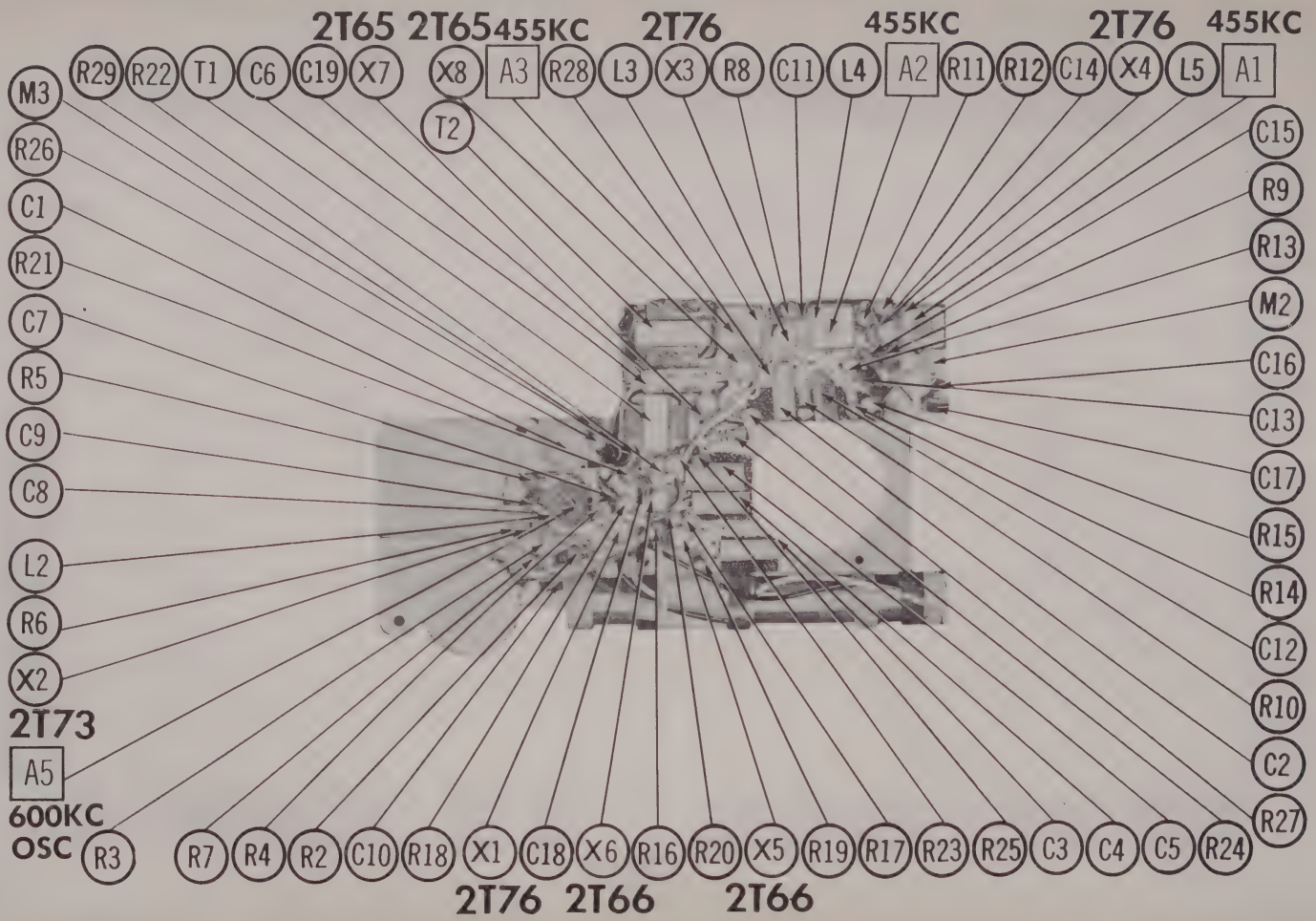
WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

DRIVE CORD STRINGING



FRONT VIEW



CHASSIS TOP VIEW

PHOTOFACT® Folder

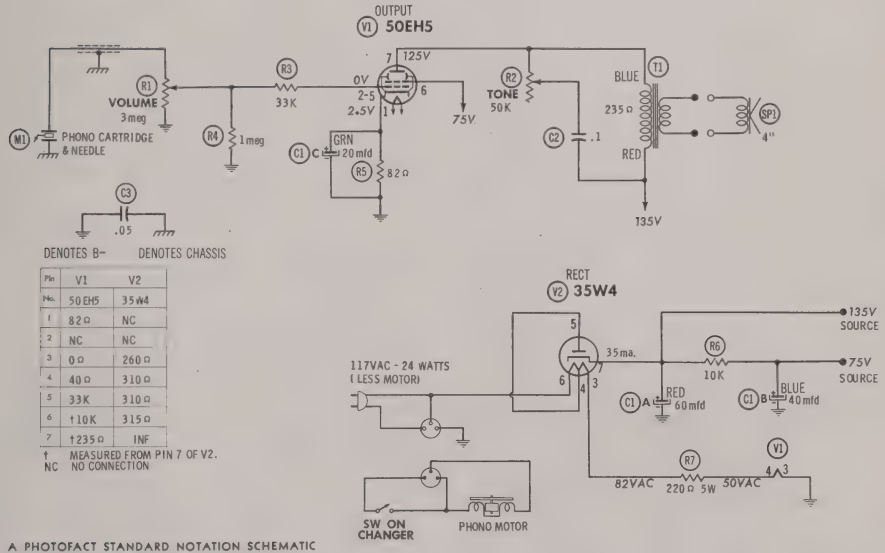
SYLVANIA
MODEL 45P16 (Ch. 662-1)

SYLVANIA
MODEL 45P16 (Ch. 662-1)

TRADE NAME	Sylvania Model 45P16 (Ch. 662-1)
MANUFACTURER	Sylvania Home Electronics, Div. of Sylvania Electric Products, Inc., 700 Ellicott St., Batavia, N. Y.
TYPE SET	AC Operated 2 Tube Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 24 Watts, .22 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER – SEE SIMILAR TELEFUNKEN TW-560 – PHOTOFACT SET 371 FOLDER 12 OR RECORD CHANGER MANUAL RC-10

SYLVANIA
MODEL 45P16 (Ch. 662-1)



Pin No.	V1	V2
1	50EH5	35W4
2	82Ω	NC
3	NC	NC
4	0Ω	260Ω
5	40Ω	310Ω
6	33K	310Ω
7	†10K	315Ω
	†235Ω	INF

† MEASURED FROM PIN 7 OF V2.
NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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KS664

SET 540 FOLDER 16

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

TUBES

ITEM No.	USE	TYPE (• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •)
V1	Output	50EH5
V2	Rectifier	35W4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SYLVANIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	60	150	161-3050	PRS3800	BBRT84215	TCT3119	TDLT-7	TVA-3455	
B	40	150							
C	20	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C3	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SYLVANIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3meg	½	153-0259	B-85	A47-3meg-Z	Q13-140	U57	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	50K	½	153-0210	B-31	A47-50K-S	Q11-123	U35	Tone
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	33K			
R4	1meg			
R5	82Ω			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R6	10K	PW5-220	5W-SQ-220	
R7	220Ω 5W			

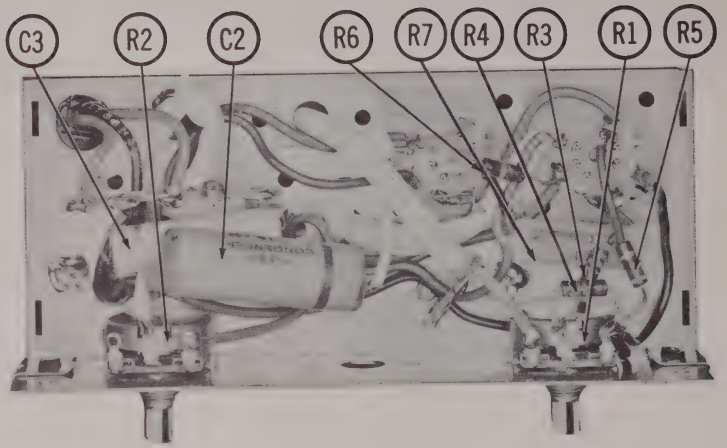
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA SYLVANIA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2500Ω	3-4Ω	143-0087	A-3025①	A-3332①	26S58	S-12Z	① Drill New Mounting Hole(s).

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA SYLVANIA PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	539-0434	4A07	

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE & NEEDLES

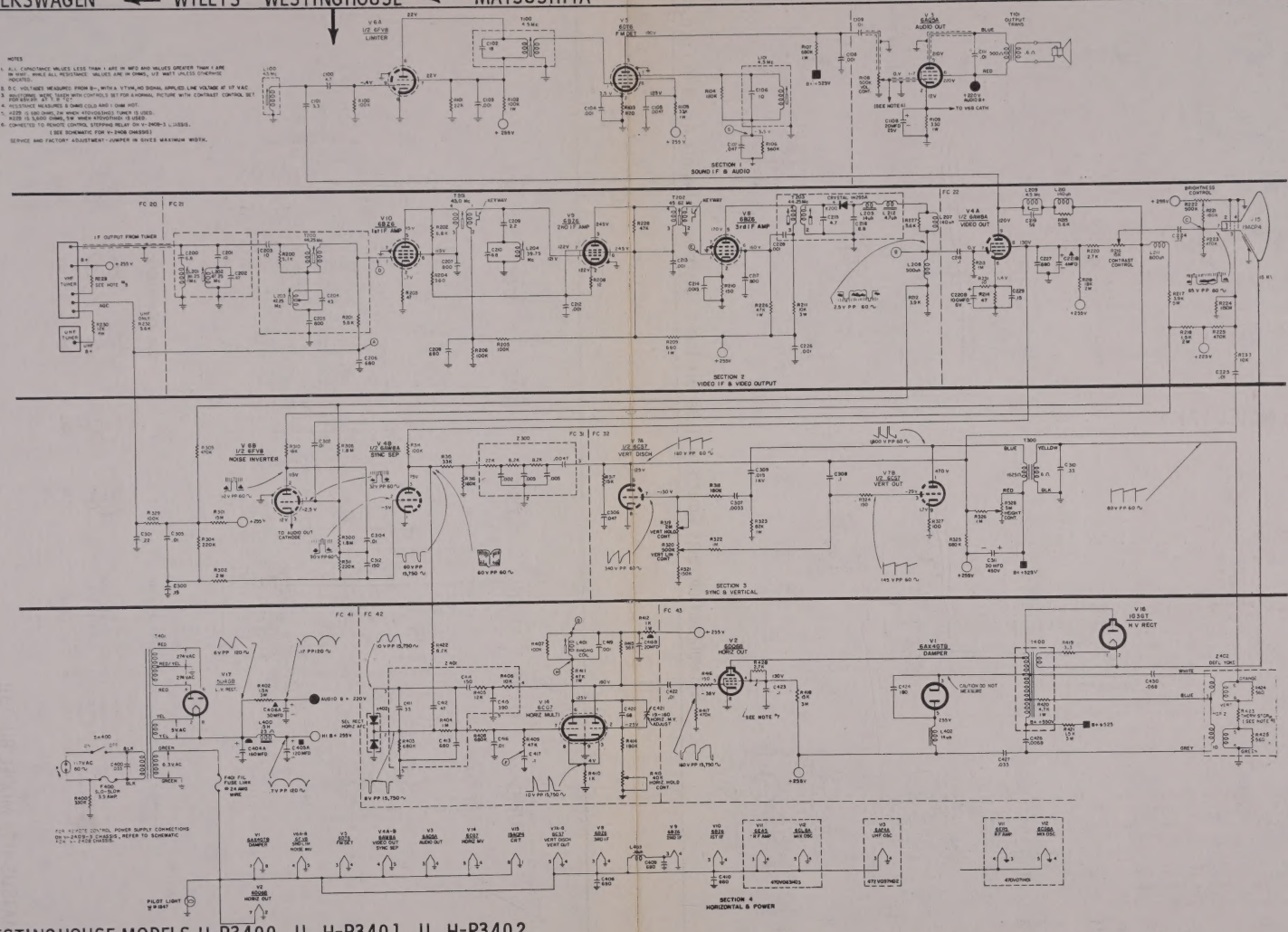
*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	SYLVANIA PART No. CARTRIDGE	SYLVANIA PART No. NEEDLE*	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE*	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE*	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE*	NOTES
M1	916-0026	902-0024 * (LP)	120TS	N8-1 *	46T	Not Req.	2T-LB-S	N-2T-S*	
		902-0025 * (78RPM)		N8-3 *					

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	740-0362	Volume
Knob	740-0363	Tone



WESTINGHOUSE MODELS H-P3400, U, H-P3401, U, H-P3402, U, H-P3450, H-P3451, H-P3452 (CH. V-2409-1, -2, -3)

Schematic Diagram Courtesy of Westinghouse Electric Corporation

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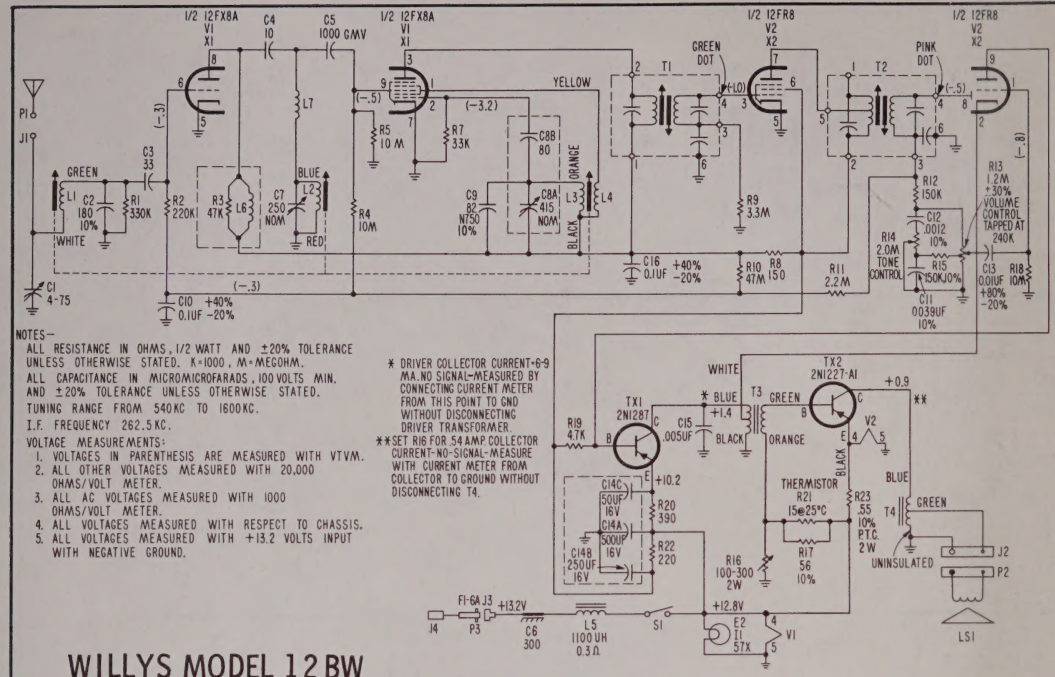
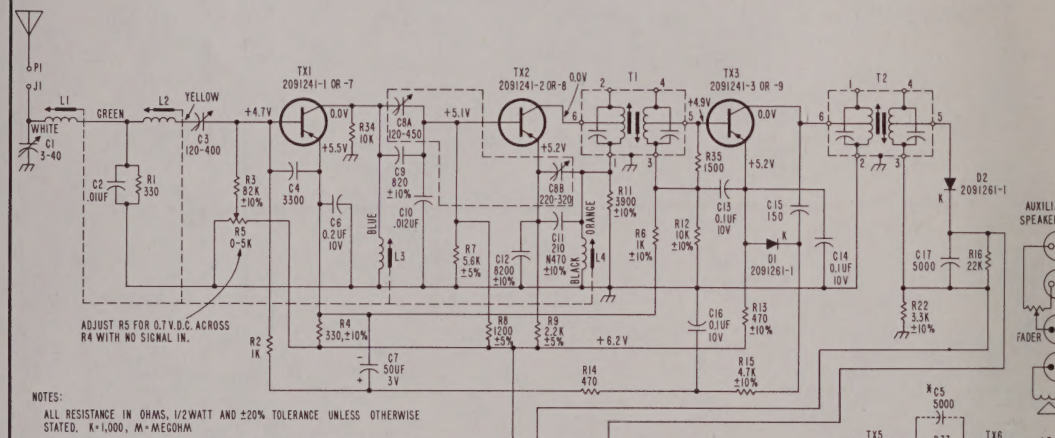


NOTES—
ALL RESISTANCE IN OHMS, 1/2 WATT AND ±20% TOLERANCE UNLESS OTHERWISE STATED. K=1000, M=MEGOHM.
ALL CAPACITANCE IN MICROMICROFARADS, 100 VOLTS MIN. AND ±20% TOLERANCE UNLESS OTHERWISE STATED.
TUNING RANGE FROM 540KC TO 1600KC.
I.F. FREQUENCY 262.5KC.
VOLTAGE MEASUREMENTS:
1. VOLTAGES IN PARENTHESIS ARE MEASURED WITH VTVM.
2. ALL OTHER VOLTAGES MEASURED WITH 20,000 OHMS/VOLT METER.
3. ALL AC VOLTAGES MEASURED WITH 1000 OHMS/VOLT METER.
4. ALL VOLTAGES MEASURED WITH RESPECT TO CHASSIS.
5. ALL VOLTAGES MEASURED WITH +13.2 VOLTS INPUT WITH NEGATIVE GROUND.

* DRIVER COLLECTOR CURRENT-6-9 MA. NO SIGNAL-MEASURED BY CONNECTING CURRENT METER FROM THIS POINT TO GND WITHOUT DISCONNECTING DRIVER TRANSFORMER.
** SET R16 FOR .54 AMP. COLLECTOR CURRENT-NO-SIGNAL-MEASURE WITH CURRENT METER FROM COLLECTOR TO GROUND WITHOUT DISCONNECTING T4.

WILLYS MODEL 12BW

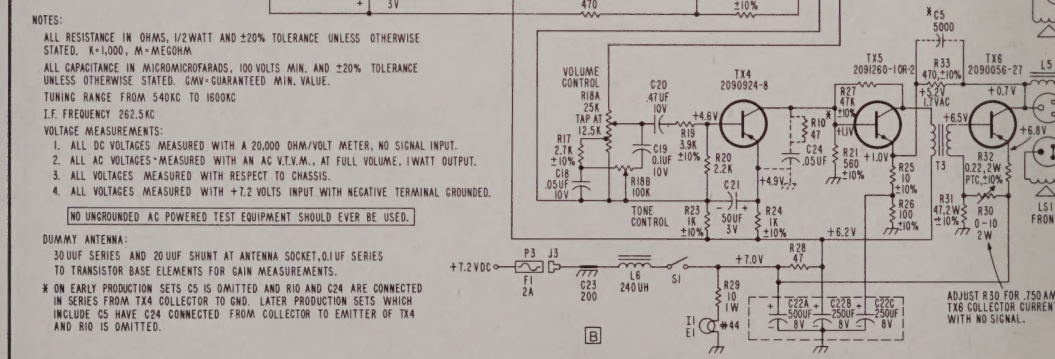


NOTES:
ALL RESISTANCE IN OHMS, 1/2 WATT AND ±20% TOLERANCE UNLESS OTHERWISE STATED. K=1,000, M=MEGOHM
ALL CAPACITANCE IN MICROMICROFARADS, 100 VOLTS MIN. AND ±20% TOLERANCE UNLESS OTHERWISE STATED. GMV-GUARANTEED MIN. VALUE.
TUNING RANGE FROM 540KC TO 1600KC
I.F. FREQUENCY 262.5KC
VOLTAGE MEASUREMENTS:
1. ALL DC VOLTAGES MEASURED WITH A 20,000 OHM/VOLT METER, NO SIGNAL INPUT.
2. ALL AC VOLTAGES MEASURED WITH AN AC V.T.V.M., AT FULL VOLUME, 1 WATT OUTPUT.
3. ALL VOLTAGES MEASURED WITH RESPECT TO CHASSIS.
4. ALL VOLTAGES MEASURED WITH +7.2 VOLTS INPUT WITH NEGATIVE TERMINAL GROUNDED.

NO UNGROUNDED AC POWERED TEST EQUIPMENT SHOULD EVER BE USED.

DUMMY ANTENNA:
30 UUF SERIES AND 20 UUF SHUNT AT ANTENNA SOCKET, 0.1 UF SERIES TO TRANSISTOR BASE ELEMENTS FOR GAIN MEASUREMENTS.

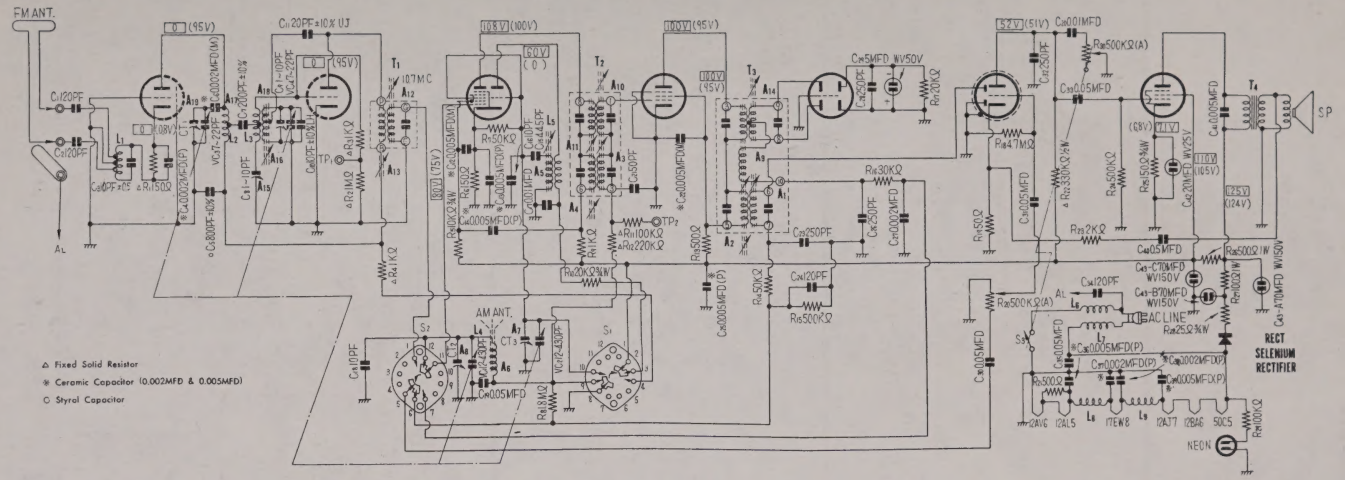
* ON EARLY PRODUCTION SETS C5 IS OMITTED AND R10 AND C24 ARE CONNECTED IN SERIES FROM TX4 COLLECTOR TO GND. LATER PRODUCTION SETS WHICH INCLUDE C5 HAVE C24 CONNECTED FROM COLLECTOR TO EMITTER OF TX4 AND R10 IS OMITTED.



KARMANN GHIA MODEL 1BG, VOLKSWAGEN MODELS 1BT, 1BV

Schematic Diagrams Courtesy of Bendix Radio, Division of Bendix Aviation Corp.

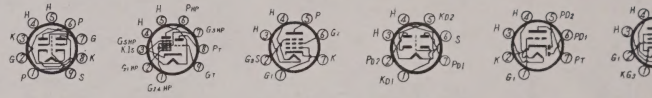
FM RF	FM CONV.	FM IF & AM CONV.	FM AF IF	FM DET	AM DET & AF	OUTPUT
1/2 17EW8	1/2 17EW8	12AJ7	12BA6	12AL5	12AV6	50C5



NOTES:

1 DC voltage measurements are made with a circuit tester.
( )·····AM position
[ ]·····FM position
2 Band selection switch is now situated at AM, and is turned in the direction of arrow marks to FM.
3 Volume control is at maximum position.
4 Socket connections are shown as bottom views.

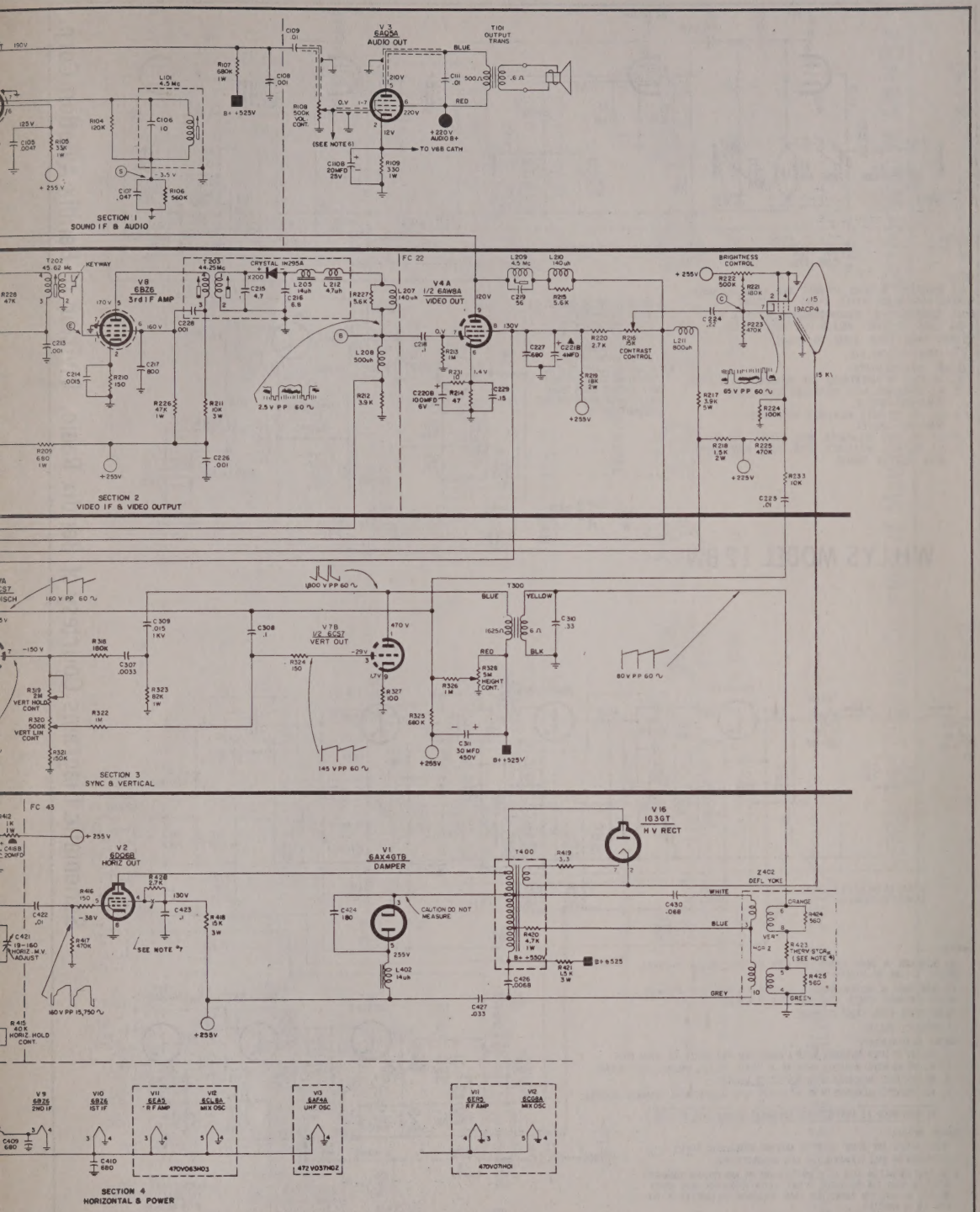
TUBE CONNECTION



17EW8 12AJ7 12BA8 12AL5 12AV6 50C5

MATSUSHITA MODEL BU-730

Schematic Diagram Courtesy of Matsushita Electric Corporation of America


SECTION 1
SOUND I F & AUDIO
SECTION 2
VIDEO I F & VIDEO OUTPUT
SECTION 3
SYNC & VERTICAL
SECTION 4
HORIZONTAL & POWER
V3
6AQ5A
AUDIO OUT
T101
OUTPUT
TRANS
V4 A
1/2 6AW8A
VIDEO OUT
V8
6BZ6
3rd I F AMP
V7 B
1/2 6CG7
VERT OUT
V2
6DQ6B
HORIZ OUT
V1
6AX4GTB
DAMPER
V16
1G3GT
H V RECT
T300
T400
Z402
DEFL YOKE
V9
6BZ6
2ND I F
V10
6BZ6
1ST I F
V11
6EA8
R F AMP
V12
6CG8A
MIX OSC
V13
6AF4A
UHF OSC
V11
6EH5
R F AMP
V12
6CG8A
MIX OSC
470V063H03
472V037H02
470V071H01
BRIGHTNESS
CONTROL
CONTRAST
CONTROL
HORIZ M.V. ADJUST
HORIZ HOLD CONT
VERT HOLD CONT
VERT LIN CONT
HEIGHT CONT.
CAUTION DO NOT MEASURE
SEE NOTE 6
SEE NOTE 7
SEE NOTE 8
TO V6B CATH
+220 V AUDIO B+
B+ +525V
B+ +550V
+255V
+225V
+258V
+255V
+255V
+255